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CLINICOPATHOLOGICAL AND RADIOLOGICAL PROFILE OF SURGICALLY TREATED NEUROTUBERCULOSIS IN A TERTIARY CARE TEACHING INSTITUTE IN SOUTH INDIA

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CERTIFICATE

This is to certify that this dissertation entitled **"Clinicopathological and Radiological Profile of Surgically Treated Neurotuberculosis in a Tertiary Care Teaching Institute in South India"** submitted by **Dr.B.Sneha Chitra**, appearing for **M.Ch., (Neurosurgery 6 Years)** degree examination in August 2017 is a original bonafide record of work done by her between January 2013 to December 2016 in the Department of Neurosurgery, Institute of Neurosurgery, Madras Medical College in partial fulfillment of requirement of the Tamil Nadu Dr.M.G.R. Medical University, Chennai.

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DECLARATION

I, Dr.B.Sneha Chitra, solemnly declare that this dissertation **"Clinicopathological and Radiological Profile of Surgically Treated Neurotuberculosis in a Tertiary Care Teaching Institute in South India"** was done by me at the Department of Neurosurgery, Institute of Neurosurgery, Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai - 600003 under the guidance and supervision of the Director of Neurosurgery, Institute of Neurosurgery, Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai - 600003 between January 2013 to December 2016.

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TABLE OF CONTENTS

ABBREVIATIONS USED

CNS	-	Central Nervous System
TB	-	Tuberculosis
PTB	-	Pulmonary TB
CSF	-	Cerebrospinal Fluid
AFB	-	Acid Fast Bacillus
CNST	-	CNS tuberculoma
CT	-	Computed Tomogram
GCS	-	Glasgow Coma Scale
ICP	-	Intra Cranial Pressure
MRI	-	Magnetic Resonance Imaging
MRS	-	Magnetic Resonance Spectroscopy
DWI	-	Diffusion Weighted Imaging
HIV	-	Human Immunodeficiency Virus
ETV	-	Endoscopic Third Ventriculostomy
EVD	-	External Ventricular Drainage
VP	-	Ventriculo Peritoneal
TBM	-	TB Meningitis
TBMH	-	TB Meningitis Hydrocephalus
ATT	-	Anti-Tuberculous Therapy

Introduction

INTRODUCTION

Tuberculosis (TB) continues to be one of the most important communicable diseases worldwide due to significant morbidity and mortality despite modern anti-tuberculosis chemotherapy. Central nervous system tuberculosis (CNS-TB), the most severe form of extra-pulmonary TB, constitutes 1% of all newly diagnosed TB cases and about 6% of all extra-pulmonary TB in immunocompetent individuals. The pathogenesis of CNS-TB is still not completely understood and there are no rapid, sensitive and reliable diagnostic tests. Routine diagnostic techniques including culture and immunological tests often are time consuming and delay the diagnosis and management.

There are no standardized diagnostic criteria for CNS-TB and the available published case series are heterogenous without any consensus. In the present scenario, radiological investigations have become a very important tool in diagnosing and initiating treatment and follow up of CNS TB.

This study outlines the clinicopathological and radiological profile of surgically treated CNS tuberculosis at a tertiary care institute and aims to provide some strategies for early diagnosis and management.

Aims and Objectives

AIMS OF THE STUDY

1. To evaluate the clinical presentation and pathological correlation of the patients with Intracranial and Spinal TB who have been surgically treated.
2. To assess the radiological profile of the patients with Intracranial and Spinal TB.
3. To determine the risk factors associated with the development of Intracranial Tuberculosis and Spinal TB.
4. To find out how many of the surgically treated CNS TB cases had a pulmonary focus at the time of diagnosis of CNS TB.

OBJECTIVES OF THE STUDY

- To the assess the clinical profile of patients with neurotuberculosis with regards to
    - Presenting symptom
    - Gender
    - Age
    - Clinical signs

- To assess the radiological profile of patients with neurotuberculosis with regards to
    - CT brain appearance
    - MRI appearance
    - MRS

- To study the histopathological profile of surgically treated neurotuberculosis patients

- To determine the risk factors associtaed with the development of neurotuberculosis
    - DM
    - HIV Status
    - Immunocompromised state
    - Contact history with TB

- To assess the tuberculous disease status of the patients with neurotuberculosis
    - Pre-existing TB- pulmonay/extra pulmonary TB
    - Newly detected pulmonary focus at the time of diagnosis with CNS-TB
    - Sputum AFB status
    - Chest X-Ray/CT Chest findings

Review of Literature

REVIEW OF LITERATURE

Tuberculosis is a granulomatous multi-system disease caused by the bacilli of the Mycobacterium tuberculosis complex. It is a major global disease and public health problem causing significant morbitity and mortality. In recent times there has been a resurgence of tuberculosis in both developed and developing countries. Despite the recent advances in treatment, TB remains one of the world's biggest threats. About one third of the world's population is affected with TB. According to the World Health Organisation (WHO), TB killed 1.5 million people in 2014 of which 1.1 million were HIV negative[(1)]. TB now causes more deaths annually when compared with HIV. There was also an estimated 1 million cases of TB in children and 140,000 deaths[(2)]. Among the TB endemic regions, India is the country with highest TB burden. The WHO statistics for 2015 give an estimated incidence figure of 2.2 million cases of TB for India out of a global incidence of 9.6 million. The TB prevalence which is the number of people living with active TB in India is estimated to be 2.5 million. Also it is estimated that 40% of the Indian population is living with TB, majority of them having latent rather than active TB[(3)]. In the state of Tamil Nadu alone, there were 54,547 new smear positive cases and 80,543 was the total number of patients registered for treatment in 2015[(3)].

Several risk factors have led to this serious phenomenon. These include malnutrition, alcoholism, increasing prevalence of HIV infection, overcrowding, poor socioeconomic status, use of immunosupressive agents and appearance of Multidrug resistant and Extreme drug resistant TB strains (MDR and XDR-TB).

Tuberculosis of the central nervous system (CNS) is a very serious form of extra pulmonary tuberculosis often leading to devastating complications and neurological deficits. Extrapulmonary TB accounts for 20% of all TB cases among which the incidence of CNS TB is estimated to be 5 to 10%. The incidence of CNS TB is directly proportional to the incidence of tuberculosis in the community and the age at which the disease is acquired. Also CNS TB most often affects the younger population in developing countries such as India. Tuberculous meningitis is a disease of childhood most common in children between 6 months and 6 years while the other forms of CNS TB including tuberculomas and spinal tuberculosis are seen in young adults.

CLASSIFICATION OF CNS TB

CNS TB can cause varied manifestations and they can be predominantly classified into the following accepted forms[4]:

Table 1. Classification of CNS TB

INTRACRANIAL TB
• Tuberculous meningitis
• Tuberculomas (single, multiple, miliary)
• Tuberculous abscess
• Tuberculous encephalopathy
• Tuberculous vasculopathy
SPINAL TUBERCULOSIS
• Pott's spine and Pott's paraplegia
• Tuberculous arachnoiditis
• Non-osseous spinal tuberculosis
• Spinal meningitis

PATHOGENESIS OF CNS TUBERCULOSIS

CNS TB can occur as a primary disease or secondary to TB elsewhere in the body, particularly lungs. Most of the infections are caused by Mycobacterium tuberculosis and very rarely the other mycobacteria are involved. M.tuberculosis is an aerobic, non-spore forming, non motile Acid Fast Bacillus (AFB) that infects humans as the

primary host. The spread is airborne by inhalation of the infected droplets. Its a slow growing organism and requires several weeks to grow on the conventional Lovenstein-Jensen medium where it produces characteristic serpentine cords of colonies. Biochemical and RNA/DNA based tests can differntiate it from other mycobateriae.

CNS Tuberculosis begins with the development of small tubercle foci (Rich foci) in the brain, spinal cord and meninges. The location of these foci, number of bacilli discharged into the CSF, their virulence and the capacity of the immune system to control them ultimately decides which type of CNS Tuberculosis will occur. Tuberculous meningitis (95%) is the primary and most common manifestation, followed by tuberculomas (2%) and abscesses (1%)[(5)]. Spinal tuberculosis occurs in about 2% of the CNS TB patients. It was believed that the bacilli reach the CNS by the hematogenous route secondary to TB elsewhere. Based on the studies and animal experiments by Rich and McCordock, it is now accepted that a caseating vascular focus, the 'Rich focus' in the cortex or the meninges is the key pathway for the bacilli to gain access into the subarachnoid space and induce meningitis[(6)].

The pathogenesis is explained in two stages. First stage is the formation of multiple tuberculous lesions during the initial bacterimia of primary tuberculosis or shortly aferwards. These foci are formed in the

meninges, subpial and subependymal regions of the brain and in the spinal cord which may remain dormant for years. The second stage is the rupture of these foci and the development of small tuberculous lesions which lead to the CNS manifestations depending on the site[4]. Since this model does not explain the frequent association of milliary tuberculosis with TB meningitis, Donald et al. after re-examining the various studies concluded that disseminated TB plays an important role in the development of TBM in children as there was an increased chance of formation of rich foci, subsequent rupture of which lead to the development of meningitis[6]. This is in contrast to the direct hematogenous spread of pyogenic meningitis.

The cytokine Tumour Necrosis Factor-alpha (TNF-alpha) is the most important cytokine implicated in the neuropathogenesis of CNS-TB. The microglial cells which are the principal resident macrophages of the CNS are the primary targets for the Mycobacterium tuberculosis. These infected microglial cells produce robust amounts of cytokines and chemokines which include TNF-alpha, IL-6, CCL2, CCL5 which lead to the disruption of the blood brain barrier, altering the permeabiltiy and causes progression of the infection[6].

The main manifestations of Brain Tuberculosis are hydrocephalus associated with Tuberculous Meningitis (TBMH) and tuberculomas.

TB MENINGITIS

PATHOLOGY

After the release of the bacilli from the rupture of the Rich foci into the subarachnoid space, thick gelatinous exudates are formed around the sylvian fissures, basal cisterns, brain stem and cerebellum. This exudate is formed as a hypersensistivity reaction to the mycobacterial antigen and contains erythrocytes, neutrophils, macrophages and lymphocytes in more mature cases. The Rich foci are most common in the vascular regions of the brain parenchyma and meninges[(6)]. The typical basilar location of the exudate is explained by the CSF flow in the basal cisterns. The exudate coats and encases the cranial nerves and arteries at the base of the brain creating a bottle-neck to the flow of CSF at the tentorium and this leads to hydrocephalus. The other serious complications of TB meningitis include infarction and vasculitis.

The brain tissue immediately underlying the exudates show a "border zone reaction" which is characterised by edema, perivascular infiltration and microglial proliferation[(4)]. The basal exudates are also most dense around the Circle of Willis, optic chiasma, suprasellar cistern and prepontine cisterns. This leads to a vascultitis like syndrome. Imflammation of the vessel wall can cause stenosis and even thrombus formation. The vessels commonly involved are the Internal Carotid

Artery, the proximal Middle Cerebral Artery and the basal ganglia perforators. Cerebral infarction is common around the sylvian fissure and the basal ganglia region.

TB MENINGITIS HYDROCEPHALUS

Hydrocephalus is one of the most common complications of TB meningitis and is usually seen as a delayed complication occuring 4 to 6 weeks after the onset of the disease. The incidence of hydrocephalus in tuberculosis ranges from 62 to 95% [(7)]. It occurs more commonly in pediatric patients than adults. It is also more severe in children and occurs at an earlier stage in the disease.

Hydrocephalus in TB meningitis may be of the following types:

- Communicating or non-obstructive
- Obstructive
- Acute or chronic
- Active or arrested

Communicating hydrocephalus is the most commonly seen type (nearly 80%) [(7)]. The thick basal exudates in the subarachnoid cisterns cause blockage of the CSF pathway and lead to communicating hydrocephalus in the early stage of the disease. In the later stages communicating hydrocephalus may be caused by blockage of the

absorptive arachnoid granulations over the cerebral convexities. The exudates also cause arachnoiditis and adhesion of the leptomeninges thereby impeding the normal CSF flow dynamics and causes impaired absorption. Ependymitis and scarring lead to blockage of foramen monro, acqueduct, and the fourth ventricular outlets causing obstructive hydrocephalus[8]. TBM can present as an acute complication or as a chronic manifestation which seen in patients with long standing disease.

CLINICAL FEATURES

Patients with TBMH show features of raised intracranial pressure which include increasing headache, vomiting, cranial nerve palsies, diminution of vision and altered sensorium. Most of these patients have non specific symptoms of malaise, fatigue, low grade fever and myalgia 2 to 8 weeks prior to the onset of meningitis. Neck stiffness is seen in 25% though meningismus is more commonly noted during the examination of these patients. Bulging fontanelles, sun-setting sign, irritability and vomiting is seen in infants. Continuously low grade pyrexia is seen in 80% of the patients. Around 50% of children with TB meningitis have prior tuberculosis whereas in adults it is around 10%[4].

Sixth nerve palsy is the commonest cranial nerve palsy in TB meningitis. Hemiparesis and hemisensory loss can occur due to infarction. Seizures can be seen in the acute presentation of the disease.

Opthalmoscopic examination will reveal Papilledema due to the raised ICP. Fundoscopy may reveal choroidal tubercles, yellowish lesions with indistinct borders present either as single or in clusters. These lesions are usually seen in miliary tuberculosis associated meningitis and is pathognomonic of disseminated TB. As the disease progresses, increasing confusion and stupor lead to deep coma, decerebrate or decorticate rigidity and spasms.

GRADING OF TBMH

The Modified British Medical Council criteria has three grades of TBM while the newer Vellore grading system has four grades (Tables 2 and 3). These grading systems have a management and prognostic significance, hence all patients should be graded at the time of diagnosis.

Table 2. **Modified British Medical Council Clinical Criteria for TB meningitis**[6]

Stage/Grade I Alert and oriented, No focal neurological deficit
Stage/Grade II GCS 14-11 or 15 with focal neurological deficits
Stage/Grade III GCS of 10 or less with or without focal neurological deficits

Table 3. Vellore Grading System of TB Meningitis and Hydrocephalus(7)

Grade I	Glascow Coma Score (GCS) 15 Headache, vomiting, fever +/- neck stiffness No neurological deficit
Grade II	GCS 15 Neurological deficit present
Grade III	GCS 9-14 Neurological deficit may or may not be present
Grade IV	GCS 3-8 Neurological deficit may or may not be present

Hydrocephalus complicating TB meningitis occurs more commonly in grade 3 and 4 patients. The incidence of hydrocephalus is low in grade 1 and 2 patients.

DIAGNOSIS

The diagnosis of TBM is often difficult as the disease presentation is non-specific and varied. The tuberculin test (Mantoux) is positive only in 30 to 50% of the cases and a pulmonary focus is seen on the chest X-ray in 50 to 87% of cases(9). Examination of CSF and identification and isolation of the bacteria is the gold standard for diagnosis. However the culture of CSF for tubercle bacilli takes a long time(several weeks) and is invariably not positive.

A number of newer diagnostic tests have come up to estasblish an early diagnosis. These include BACTEC(Radiometric culture), CSF ADA levels, PCR, ELISA and other antigen reaction based methods with varying levels of sensitivity and specificity.

The CSF findings in patients with untreated TB meningitis have been characteristically described. These include[4]:

- **CSF pleocytosis**: more than 20 cells, usually lymphocyte preponderance is seen (60-400 cells per ml), in the early stages polymorphonuculear cells may be seen which are replaced by lymphocytes in the later stages
- **Increased CSF protein** (0.8 to 4 g/l) giving it a turbid appearance and leading to the formation of the characteristic cob-web.
- **Low sugar**: less than 50% of serum glucose concentration usually ranging between 18-45mg/dl
- CSF ADA levels are elevated in TB meningitis and is highly sensitive in differentiating from pyogenic and other forms of meningitis.

RADIOLOGICAL FEATURES

Contrast enhanced CT is the investigation of choice in the early stage of the disease especially in young children and sick adults. MRI may give a better delineation of the parenchymal involvement but a CT can be done quickly and is less expensive, valuable in pediatric age group where general anaesthesia may be required for taking MRI.

The following features are characteristic in the post contrast images:

- Ventricular dilatation is present in majority of the cases. The degree of hydrocephalus depends on the severity of the disease.
- Intense meningeal enhancement (more common in HIV infected patients)
- Thick basilar exudates in the basal cisterns and sylvian fissures giving “spider-leg appearance”
- Obliteration of the sulci and gyri over the cerebral convexities

  Several authors have described the MRI with contrast as being a more specific investigation than a CT in readily depicting the meningeal and parenchmymal involvement, tuberculomas, cerebritis, abscess and infarcts. However a contrast CT brain still can be effectively used to distinguish TBM from pyogenic meningitis. Basal enhancement, tuberculoma, ventriculomegaly and infarction were significantly more common in TBM. Kumar et

al have proposed that basal meningeal enhancement, tuberculoma or both were 89% sensitive and 100% specific for TBM.[10]

MEDICAL MANAGEMENT

Medical management is suitable in managing early grade patients (Vellore Grade 1 and 2) with communicating hydrocephalus. It consists of mannitol, furosemide, acetazolamide and steroids. However a shunt needs to be done promptly if the patient is not responding and showing signs of worsening neurological status.[7]

SURGICAL MANAGEMENT

INDICATIONS FOR SURGERY

Early grade (grade 1 and 2) patients should undergo surgery if medical management fails. Studies have shown that better outcomes have been associated with early surgery especially in patients with early grades.

In case of grade 3 and 4 patients, the altered sensorium seen is multifactorial and not merely because of the presence of hydrocephalus. TB endarteritis, pan-vasculitis, involvement of the perforators of basalganglia and diencephalon leading to infarcts and presence of encephalopathy all contribute to the poor GCS seen in grade 3 and 4 patients. In such patients a shunt procedure will not improve the

neurological status and a trial of EVD for 2-3 days may be indicated. Those patients whose GCS improves after placement of EVD are the ones where the hydrocephalus and raised ICP were the main reasons for neurological deterioration and a shunt placement will really be beneficial. EVD is also indicated in cases where the CSF is very turbid due to the increased protein content. A primary shunt in such patients will lead to shunt failure due to the blockage by the protein rich CSF. The EVD can be converted to a shunt once the CSF becomes clear and patients improve neurologically.

VENTRICULO PERITONEAL SHUNT vs ETV

Bhagwati was the first to document the successful management of TBMH with ventriculoatrail shunting procedure[(7)]. However since the 1980's the ventriculoperitoneal shunt has become the mainstay of management of TBMH due to the unique complications associated with ventriculoatrial shunt. There have been several studies reporting the usefullness of a vp shunt procedure in TBMH, however the life long complication rate still remains high among these patients when compared with patients undergoing shunts due to other reasons. The complication rate ranges from 20 to 40%[(7)] and includes shunt obstruction requiring multiple revisions, shunt infections, abdominal psuedocysts and erosion of skin over the shunt components. Shunt blockage is very common due

to the high cellularity and protein rich CSF seen in these patients. Complications are also higher in poor grade patients who undergo shunting.

VP shunt remains the procedure of choice especially in the early weeks wherein an ETV is technically challenging due to the basal exudates distorting the anatomy and often results in failure.

The risk of bleeding and injury to basilar artery is very high and also the blocked cisterns do not allow the CSF to flow freely post ETV leading to the high failure rates. Therefore a shunt might be a safer and more effective procedure during the acute stage of the disease. ETV can be reserved for the cases with chronic hydrocephalus, shunt failure cases and patients who are on ATT for more than 4 weeks[7]. Immediate outcome and radiological improvement is also faster in post shunt patients. ETV complications and failure rates are higher in patients in the active phase of the disease during the first three months. It is therefore better to attempt ETV after starting chemotherapy and steroids. At 6 months, the success rates of both ETV and shunt surgery are quite similar. There has been no consensus or effective randomized trials to compare the efficacy of ETV versus shunt procedure in the management of TBMH. In conclusion, considering the high complication rates seen in shunted patients and ETV being more physiological than a shunt surgery,

the long term outcome might tilt in favour of ETV especially when performed after adequate chemotherapy and steroids[11].

The most significant factor associated with the outcome after CSF diversion is the preoperative neurological status and grading of the patient. Early surgery (within 48 hours) and patients presenting in Grades 1 and 2 are associated with better outcome.

The mortality rates are higher in HIV positive patients with TBMH compared with the HIV negative patients. There is a significant relation between the CD4 counts and the outcome. Therefore several studies have suggested that the HIV positive patients with TBMH should always undergo a trial of ventricular or lumbar CSF drainage and only those who improve should undergo shunt surgery.

INTRACRANIAL TUBERCULOMA

PATHOLOGY

Brain tuberculomas are the commonest manifestation of parenchymal TB and are thought to arise when the tubercles enlarge without rupturing into the subarachnoid space. Multiple small tubercles coalesce to form a single tuberculoma.

Although the tuberculomas are treatable by ATT, larger lesions and delayed diagnosis often lead to significant morbidity. They can occur in any age group, but more common in the younger adults. They can be solitary or multiple lesions (16 to 34%)[7]. Tuberculomas can occur in any part of the brain (meningeal, parenchymal, ependymal). Usually the lesions are seen in the supratentorial compartment in adults while infratentorial lesions are common in the pediatric population. Tuberculomas may also co-exist with tuberculous meningitis where they can be seen as multiple discrete ring enhancing lesions or grape like clusters located close to the basal cisterns.[12]

Cerebral tuberculomas commonly occur in the corticomedullary and periventricular regions due to the hematogenous spread of the tuberculous bacilli. In adults the most common location is the left frontal and parietal lobes, probably due to greater blood flow to the dominant hemispheres. They may rarely occur in the ventricles (lateral ventricle is the commonest site), sella turcica, cavernous sinus, hypothalamus, sphenoid and mastoid air cells. They usually occur in the absence of meningitis but may coexist due to the extension of the parenchymal tubercles into the CSF via the periventricular Virchow Robin spaces.

The pathophysiology of tuberculoma formation is complicated and involves an array of host immune mechanisms. CNS tuberculomas occur

as a host reaction to the mycobacterial antigen. The infected macrophages produce inflammatory mediators leading to the recruitment of peripheral macrophages and monocytes. These infected macrophages disseminate to other parts of the body. The mycobacteria presenting their antigen via the Major histocompatibiliy Complex-MHC II to the CD4+ T cells are killed by the lysosomal enzymes. These T cells further enhance the mycobacterial lysis by release of Interferon gamma. The patients body reacts by granuloma formation around these infected immune cells and necrotic cells in an attempt to contain it. Though the granuloma formation is a protective mechanism it can turn against the host recovery. The inflammatory process can get exaggerated and lead to unwanted side effects[13]. The damage is also further worsened by the inherent resistant nature of the mycolic acid in the mycobacterial cell which protects it from the host immune cells and antibiotics. The genetic composition of the mycobacterium and the host also plays a role in the selective neurotropism. A recent study by Rodriguez et al has shown there is an upregulation of the fibrinolytic system in the chronic phase of the disease and the mycobacterium itself has a role to play in the overexpression of the molecules leading to the chronic inflammation seen in tuberculosis.[14]

Intracranial tuberculomas are usually firm, greyish-white, avascular, spherical granulomatous masses with sizes ranging from 2 to 8

cm. They are well demarcated from the surrounding brain tissue which is compressed with perilesional edema and gliosis. Histopathologically the tuberculomas may be caseating or non-caseating. In the early stage of tuberculoma formation, predominant inflammatory reaction with plenty of giant cells is seen which is surrounded by a poorly formed capsule. Later as the tuberculoma matures, the collagenous capsule becomes thick and well developed with a core of caseation which consists of the necrotic debris. The surrounding inflammatory reaction disappears and they show a typical granulomatous reaction consisting of epitheloid and giant cells mixed with lymphocytes and central caseous necrosis. The central area may contain clear or straw coloured fluid due to liquefaction necrosis.

CLINICAL MANIFESTATIONS

Tuberculomas commonly manifest as seizures. Gulati el al in their study found tuberculomas to be the commonest cause of chronic seizures[15]. Multiple and larger lesions can cause symptoms and signs of raised ICP which include headache, vomiting, visual blurring, papilledema, cranial nerve palsies, altered sensorium and neurological deficits such as hemiparesis and speech difficulty depending on the site of the lesion. Infratentorial tuberculomas are common in pediatric age group and may present as brainstem syndromes, multiple cranial nerve palsies and cerebellar dysfunction. Generalised symptoms of systemic

tuberculosis such as fever, malaise, loss of weight and appetite are usually absent.

Patients with intracranial tuberculoma often do not have any history of tuberculosis infection or conversely may also be on ATT at the time of diagnosis. The CSF analysis in tuberculoma patients is usually normal. Tuberculomas can occur in apparently healthy individuals and hence the diagnosis of tuberculoma should always be considered when presenting as solitary or multiple intracranial lesions, especially in an endemic and high prevalence region such as ours.

RADIOLOGICAL FEATURES

The imaging features of tuberculoma are inconsistent and nonspecific. They vary according to the stage of the granuloma formation. On CT scan, mature tuberculomas appear as well demarcated ring or oval shaped contrast enhancing lesions with occasional target sign. The central nidus surrounded by enhancing ring causing the target sign was considered to be pathognomonic for tuberculoma. Tuberculomas are frequently confused with cysticercosis, however irregular ring enhancing lesions, frequently greater than 20mm in size and surrounded by disproportionate perilesional edema are characteristic features of tuberculoma on CT scans(4). Immature tuberculomas can present as iso to hyperdense ring enhancing lesions often undistinguishable from other

ring enhancing lesions which include abscess, neurocysticercosis, metastasis, fungal granuloma and tumours. The MRI is a better and more reliable investigation in distinguishing the tuberculomas from other lesions.

MRI of CNST depends on whether it is a caseating tuberculoma with a solid caseating portion or liquid central region or a non caseating tuberculoma. Tuberculoma with solid caseation is isointense on T1 and iso to hypointense on T2 weighted images. The non caseating granuloma is usually hypointense to parenchyma on T1 and hyperintense on T2 with homogenous contrast enhancement.(16) There is considerably variability in the T2 appearance as it depends on the maturity of the lesion and the degree of caseation. The cheesy caseation material is lipid rich and accounts for the T2 hypointensity. If the core of the tuberculoma is liquid T2 hyperintensity may been seen. In the immature stage, tuberculomas may appear as multiple scattered regions of iso or T2 hypointensity surrounded by hyperintense edema. These are the inflammatory cells surrounded by a poorly formed capsule. Mature tuberculomas appear hypointense or isointense through out the entire lesion. Post T1 contrast images show single or mutiple ring enhancing conglomerate lesions which corelate with the inner collagen and outer cellular layers. The

conglomerate ring lesions are characteristic of tuberculoma and help in distinguishing from other neoplasms.[17]

MRS

MR Spectroscopy has proved to be very useful in differentiating tuberculomas from other lesions. Prominent lipid lactate peak (0.9, 1.3, 2.0 and 2.8 ppm) attributed to the lipid rich core of caseation necrosis and the cell wall of the bacteria is characteristic of caseating T2 hypointense tuberculomas. Choline peak may be observed in variegated T2 heterointense non caseating tuberculoma lesions and can mimic a tumour. Tuberculomas have a prominent decrease in NAA/Cr and slight decrease in NAA/Cho with a choline/creatinine ratio greater than 1. This can help in identifying tuberculoma with a tumour like presentation mimicking a high grade glial lesion.[18]

Recently MTI (Magnetization Transfer Imaging) has proved to be useful in distinguishing multiple tuberculomas from neurocysticercosis. Tuberculomas have a lower T1 Magnetization transfer than the adjacent brain parenchyma. Neurocysticercosis lesions have higher MTI when compared with tuberculomas[19].

DIFFUSION WEIGHTED IMAGING

Caseating tuberculomas with a liquid central portion show diffusion restriction at the core of the lesion. DWI is useful in diagnosing infective abscess.

Recently, Dynamic Contrast Enhanced (DCE) MRI and DTI have also been studied in tuberculoma imaging. DCE indicates the vascularity of the lesion and may prove beneficial in differentiating tuberculomas from the tumours. Gupta et al. have studied the DTI indices in comparison with the immunohistochemistry of the MMP-9(Matrix Metalloproteinase-9) expression in tuberculomas and have concluded that there is a strong co-relation and DTI derived MMP-9 can be used as a surrogate marker for brain tuberculomas and may also be useful in predicting the therapeutic response to specific anti-tubercular drugs.[20]

MEDICAL MANAGEMENT:

Empirical ATT can be started for patients with systemic tuberculosis having a brain mass suggestive of tuberculoma without doing a biopsy of the lesion especially in endemic region such as ours. Empirical ATT can also be initiated for lesions which have the characteristic MRI features in the absence of systemic infection. Patients with deep seated lesions such as those near brain stem can also be started on empirical therapy. All the patients on medical management should be

on close follow up and a repeat imaging is to be done 6 to 8 weeks after initiation of therapy. Most of the CNST show response to ATT in the form of decrease in size and resolution of edema. ATT should be continued upto 18 months or longer in these patients.[7]

SURGICAL MANAGEMENT

Surgery is indicated when there is no response to ATT, for large lesions causing mass effect, raised ICP and focal deficits and when the diagnosis is in doubt. Surgery can be a partial or total excision depending on the location of the lesion and extent of involvement. Radical excision is advocated for lesions in the non-eloquent areas. There is a risk of tuberculous meningitis following partial or subtotal excision of tuberculomas. Skull base lesions can be accessed via transphenoidal route and endoscopic biopsy can be done. Stereotactic diagnostic biopsy can be done for deep seated lesions.

PARADOXICAL WORSENING

Paradoxical enlargement of tuberculomas and worsening of the patients neurological status has been observed after the initiation of ATT in some patients. This can occur anytime and has been noted to occur anywhere between 2 and 27 weeks after ATT(7). The exact mechanisms are unclear and involve a combination of factors which include- host immune response to the mycobacterial antigen, Delayed Type

Hypersensitivity (DTH) reaction, virulence of the bacilli, antigen load and reaction to chemotherapy. Continuation of ATT with steroid therapy usually leads to resolution. Surgery is indicated for those cases which do not respond to steroids and cause progressive neurological deterioration.[21]

TUBERCULOUS ABSCESS

Tuberculous abscess is a distinct entity and is a rarely reported form of CNS tuberculosis. The characteristic granulomatous reaction and caseation seen with tuberculomas is lacking here. Tubercular abscess usually occurs in the supratentorial compartment and is difficult to distinguish from pyogenic abscess. Clinical and laboratory evidence of tuberculosis is usually positive. They are usually solitary and larger than tuberculomas, have vascular granulation tissue and progress rapidly causing seizures, raised ICP and neurological deficits. The histopathological confirmation of tuberculous abscess depends on the following criteria as described by Whitener: i)microscopic evidence of pus in the abscess cavity ii)microscopic changes in the abscess wall iii) isolation of Mycobaterium tuberculosis[22]. Surgical drainage and anti-tuberculous therapy is the treatment of choice.

SPINAL TUBERCULOSIS

POTT'S DISEASE

Tuberculosis can affect any part of the spine- cervical, dorsal, lumbar or sacral. It accounts for 1-5% of CNS TB and 50% of skeletal tuberculosis cases and is presently the commonest cause of non-traumatic paraplegia in most of the world[23]. It was first described by Percival Pott in 1779 and the classical description of the disease process first beginning in the disc space and progressing to involve the body leading to collapse of spinal elements, severe and progressive kyphosis became to be known as Pott's disease. It is most common in the first three decades of life and there is a male preponderance. Upto 45% of the patients with pott's spine develop neurological deficits[24].

Spinal TB can manifest as tuberculous spondylodiscitis or spondylitis. The mode of spread is most commonly hematogenous via the venous plexus of Batson. It is usually secondary to Tuberculous focus elsewhere in the body usually in the lung. It can be contiguous to a pulmonary abscess manifesting as thoracic spondylitis. Spinal tuberculosis is also being increasingly reported as a primary infection spreading via the hematogenous route from the gastrointestinal tract[24]. The thoracic spine involvement is seen in about 65%

of cases, the lumbar in 20%, cervical 10% and thoracolumbar spine in 5% and atlanto axial involvement in less than 1% of cases[4].

The tuberculous infection usually starts in the cancellous bone adjacent to a disc or under the periosteum of the vertebral body. Vertebral body destruction leads to the anterior wedging and collapse of the body. Spinal cord compression occurs due to the mechanical pressure caused by the paraspinal abscess. Neurological deterioration in pott's spine can be attributed due to multiple factors- verterbal body collapse, dural invasion by granulation tissue, compression of the debris of sequestrated bone, disc destruction or dislocation of the vertebra(4). An abscess within the spinal canal can cause quick neurological worsening. Sudden worsening of prexisting paraparesis to complete paraplegia can occur due to acute infective anterior spinal artery thrombosis and carries the poorest prognosis[24].

Tuberculous spondylitis can be of the following types depending upon the radiological site of involvement:

i) **Paradiscal-** this is the commonest variety and involves the margins of the two adjacent vertebra. The disc space is reduced and the vertebral border appears fuzzy. The spread of infection follows the segmental arterial supply pattern and hence the characteristic

involvement of the superior half of inferior vertebra and inferior half of superior vertebra.

ii) **Central**- central portion of a single verterba is involvment. The proximal and distal disc space remains intact. The mode of infection is considered to be venous.

iii) **Anterior Marginal**- the infection begins in the anterior margin of the vertebra and with minimal disc space involvement.

iv) **Posterior-** involving the posterior spinal elements which include the lamine, pedicle and the spinous processes. The vertebral body remains intact.. The spread of infection is arterial. This can present primarily as a neurological deficit without affecting the body. This presentation is uncommon and also called as atypical spinal tuberculosis

v) **Synovial-** tuberculous involvement of the synovium of the occipitoatlantal and the atlantoaxial joints.

CLINICAL MANIFESTATIONS

The symptoms of Pott's spine depend upon the disease severity. Chronic and indolent localised back pain is the usual presenting feature worsening progressively a the disease process progresses. Night pain is a

characteristic feature of the disease. Average duration of the symptoms is usually around 3-4 months at the time of diagnosis. Fever, malaise, loss of weight and appetite may be present. In patients with lumbar spine involvement, the pus from the abscess may track down anteriorly into the psoas muscle and manifest as a psoas abscess. Patients with a "psoas sign" tend to lie down with their legs in a flexed position. In patients in mutiple adjacent level vertbral involvement, kyphotic deformity is the prominent feature.

Pott's spine usually manifests as compressive myelopathy. Numbness of lower limbs, tingling sensation or a band like compression are the usual sensory features along with motor weakness. Cervical level involvment causes weakness and sensory symptoms of both upper and lower limbs. Thoracic and lumbar involvement causes motor and sensory symptoms of the lower limbs. Pott's spine can also mimic a disc prolapse when there is a localised nerve root compression. But here the pain will be constant and unrelenting without any variation with movement.

Synovial tuberculosis of the antlanto-axial joint manifests as subluxation of the C1-C2. Extradural compression by tubercular granuloma without vertebral body changes can also occur and can present as compressive myelopathy. This is a uncommon presentation and has been called the 'Spinal tumour syndrome' type of spinal tuberculosis.[24]

Clinical examination reveals focal spinal tenderness of the spinous process at the involved segments and muscle spasm. Patients are most comfortable lying down and movement aggravates severe pain. Focal kyphosis can be seen usually in the mid thoracic and thoraco-lumbar regions. Cold abscess presenting as a paraspinal swelling, sometimes with a discharging sinus tract may be seen. In the late stages of the disease, spastic paraplegia occurs, extensor plantar response and sustained clonus is seen. The initial paralysis progresses through the stages of spastic paraparesis, spastic paraplegia in extension and spastic paraplegia in flexion. Bowel and bladder involvement occurs late. Areflexic paraplegia and total loss of sphincter control are the extreme manifestations of Pott's spine.

Diagnosis of Pott's spine is based on the typical clinical presentation and system manifestations. Any past exposure of tuberculosis- pulmonary or visceral and concomitant tuberculous infection is strongly supportive of the diagnosis especially in endemic region such as ours.

POTT'S PARAPLEGIA

SEDDON'S CLASSIFICATION OF PARAPLEGIA

Seddon et al classified tuberculous paraplegia into two groups based on the disease process.

- **Group A** is **early onset paraplegia** occuring in patients with active disease process occuring within 2 years of the disease. It includes inflammatory edema, presence of abscess, granulation tissue, caseation or necrosis of the cord.
- **Group B** is **Late onset paraplegia** occuring after 2 years, in the healed phase of the disease. It can occur due to mechanical pressure on the cord or due to disease recrudescence. Internal gibbus or canal stenosis can be seen due to the debris and sequestrated tissue.

RADIOLOGICAL FEATURES

The radiological manifestations depend upon the stage and severity of the infection. Plain antero-posterior and lateral X-rays can be normal early in the disease, but as the disease progresses, disc space narrowing and end plate rarefaction become prominent. In later stages, vertebral body collapse and kyphosis can be seen. A chest X-ray should always be taken to rule out a pulmonary focus. CT scans are valuable in imaging of the posterior spinal elements, craniovertebal junction and sacral region

where the bony extent of the lesion is seen better than in the X-ray. MRI with gadolinium contrast is considered the investigation of choice for diagnosis of spinal tuberculosis. MRI is able to reveal the abscess location, granulation tisse, nerve root and cord compression changes and coexisting leptomeningeal inflammatory changes better. Bone Scan may reveal active site of tuberculous infection and is highly sensitive. Confirmation of the diagnosis is made by demonstration of AFB in the biopsied specimen or a classical histopathological feature of Tuberculous lesion which includes the granulomatous inflammation with presence of epitheloid and langerhan's giant cells.

MANAGEMENT

The multi-drug ATT remains the cornerstone in the treatment of spinal tuberculosis. The goals of the treatment of spinal tuberculosis include eradication of the infection, avoiding relapse, prevention or correction of neurological deficits and skeletal deformity. Uncomplicated tuberculous spondylitis without any neurological deficit can be managed conservatively with ATT and orthotic support. Since spinal tuberculosis is a paucibacillay disease, a prolonged duration of 18 months to 2 years drug therapy is usually recommended to eliminate the persistent slow growing bacilli. Defaulters are at risk for a relapse and drug-resistant infection.[24]

SURGICAL MANAGEMENT:

The indications for surgery depend upon the neurological deficits.

Tuli et al have classified the deficits into the following grades[24]:

GRADE I	Patient unware of neurological deficits. Signs of early spasticity present- plantar extensor / ankle Clonus
GRADE II	Patient perceives some difficulty in walking. Can walk with support. Mild spastic paresis is present.
GRADE III	Patient is non-ambulatory. Sensory involvement less than 50%. No bowel and bladder involvement. Paralysis in extension
GRADE IV	Grade III plus sensory involvement more than 50% Bowel bladder involvement/flexor spasms/paralysis in flexion.

Patient presenting with Grades I and II can be put on conservative management. Any worsening of the disease or non improvement after 3-4 weeks of therapy or complications during conservative therapy and patients presenting with higher grades are indications for surgery. Surgical intervention is the modality of choice when there is abscess

formation, excessive bony destruction with cord compression and rapidly progressive neurological deficit.

The surgical procedure includes decompression, debridement with or without stabilisation and the approach depends on the site of the lesion. The anterior approach enables removal of the all the infected tissue and devitalised bone and can be done via thoracic route for dorsal lesions and retroperitoneal or lumbar route for thoraco-lumbar and lumbar lesions. Cervical lesions upto T1 are accessed by anterior approach, Dorsal lesions upto dorsolumbar junction by anterolateral approach and lumbar/lumbosacral lesions by extraperitoneal route.

Planned anterior and posterior approaches can be combined in a single sitting to achieve optimal debridement, stability and correction of deformity.

CNS TB and HIV

CNS involvement is seen in 10 to 20% of AIDS related tuberculosis[(4)]. Also TB ranks as the leading cause of death among HIV positive people accounting for 24% of all the deaths of TB patients worldwide[(25)]. Mycobacterium tuberculosis and atypical Mycobacterium avium intercellulare infection is seen in AIDS. Meningitis, abscess and tuberculomas can occur. Atypical mycobacterial infections are more

common and cause single or multiple intracranial tuberculomas. IV drug abusers are at high risk for developing CNS tuberculosis. The radiological features are similar, there is a higher incidence of meningitis in HIV infected individuals and granulomas are less common. Also the mortality rates are higher when compared with non HIV infected patients with CNS tuberculosis.

ANTI-TUBERCULOUS THERAPY FOR CNS TB

Majority of the present ATT drugs have CSF penetration and the levels attained are equal or higher than the systemic levels especially in the presence of meningeal inflammation. The first line drugs are isoniazid (10 to 20 mg/kg/day upto 300mg), rifampicin (10 to 20 mg/kg/day upto 600mg), pyrazinamide (15 to 20 mg/kg/day upto 2g), ethambutol (15mg/kg/day) and streptomycin(15mg/kg). CNS tuberculosis is put under Category I of ATT and this includes initial phase therapy (2 months) with streptomycin, isoniazid, rifamipicin and pyrazinamide and 7-month continuation phase with isoniazid and rifampicin. As this regimen frequently leads to emergence of neurological deficits and also considering the chronicity of the infection a minimum of 12 months of ATT is recommended at present[(4)].

ROLE OF CORTICOSTEROIDS

Several studies have now conclusively proven the role of corticosteroids in CNS tuberculosis especially in TB Meningitis. Treatment with Prednisolone (60 mg/day in adults and 1–3 mg/kg/day in children) is advised in patients with tuberculous meningitis[(4)]. The dosage is gradualy tapered over 4 weeks. The response to steroid therapy is dramatic and it has a significant role to play in improving the neurological outcome.

RECENT ADVANCES IN DIAGNOSTIC METHODS

Flurescent microscopy with LED (Light emiting diode) technology has become available which increases the sensitivity of detecting M.tuberculosis by 10% when compared with conventional staining and microscopy. Traditional culture methods using the LJ medium take around 4-6 weeks whereas the recently availbale liquid culture systems-BACTEC (Beckton Dickinson) and MGIT can give results within 1-3 weeks. The MGIT (Mycobacterial Growth Indicator Tube) can yield results in less than 8 days and can also be used to detect the drug susceptibilty of the mycobacterium[(26)].

Gene amplification methods and DNA and RNA probe based techniques are now available which are useful for quick identification of the mycobacterium from the isolates. Gene amplification techniques are

highly sensitive and can detect even 1-10 organisms under optimal conditions. They can be classified as those based on PCR and others on Isothermal amplification reactions. These are especially useful in paucibacillary extra-pulmonary forms of tuberculosis such as CNS TB. PCR has been found to be positive in 50 to 70% of neurotuberculosis cases as compared with 5 to 20% positivity in the demonstration of mycobacterium and cultures[27].

The Genexpert system is a molecular test which detects the DNA in the mycobacterium and can also assess the genetic mutations associated with rifampicin resistance. First launched in 2004, it became availble in India by 2012 and is now being increasingly used for rapid detection.

IGRA (Interferon Gamma Release Assay) is used to detect IFN-y (interferon gamma- y). IGRA is an ELISA based test which detects the interferon gamma specific for tuberculosis. It does not depend upon the BCG vaccination status of the individual and is positive in both active and latent tuberculous infection. Quantiferon-TB test is yet another commercially available cytokine assay which can detect latent TB infection.

Material and Methods

MATERIAL AND METHODS

Nature of study	**:**	Retrospective Analytical
Total cases studied	**:**	**141**
Place of study	**:**	Institute of Neurosurgery , Rajiv Gandhi Government General Hospital, Chennai
Time of study	:	August 2013 to June 2016

PATIENT SELECTION:

For this study, CNS-TB was defined as follows:

i. patients who had symptoms and signs of CNS Tuberculosis with radiographic or histopathologic evidence of tuberculous infection, and/or

ii. those with highly probable diagnosis, supported by radiographic features, but not confirmed microbiologically, but who responded to anti-TB therapy.

INCLUSION CRITERIA:

All the patients who were admitted in neurosurgical wards who underwent surgery for neruotuberculosis- which included post TB Meningitic hydrocephalus, Tuberculomas and Pott's spine.

EXCLUSION CRITERIA:

Patients with neurotuberculosis who were conservatively managed were excluded from this study.

DATA COLLECTION:

Clinical, pathological and radiological data of patients who underwent surgery for neurotuberculosis was collected from departmental records and registers.

ETHICAL ISSUES: NIL

ANALYTICAL METHODS :

Analysis was done using Ms-Excel and Epi-info statistical package.

Observations and Results

OBSERVATIONS AND RESULTS

A total of 141 consecutive patients who were surgically treated for neurotuberculosis between August 2013 and June 2016 were included in this study. The observations and results of the study are as follows:

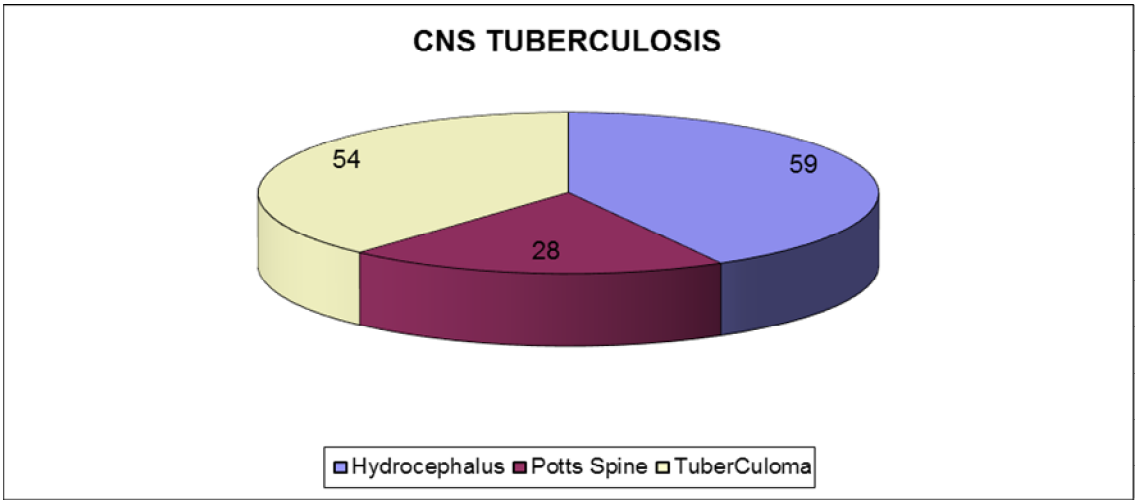


FIGURE 1: PIE CHART SHOWING THE NUMBER OF CASES OF SURGICALLY TREATED CNS TUBERCULOSIS

Out of the 141 patients included in the study, 59 patients had hydrocephalus, 54 presented with tuberculomas and 28 had pott's spine.

PATIENT DEMOGRAPHICS - GENDER PROFILE

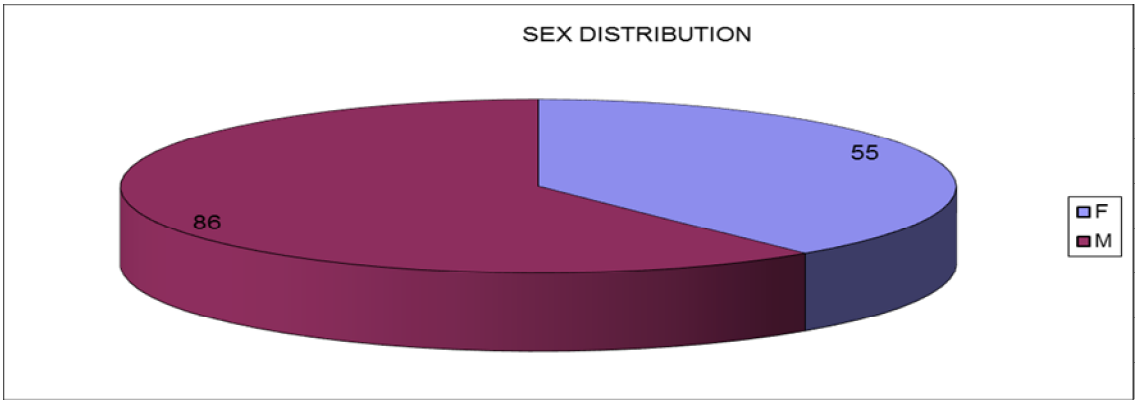


FIGURE 2: PIE CHART SHOWING THE GENDER PROFILE OF PATIENTS WITH CNS TUBERCULOSIS

Out of the 141 patients, 86 were males and 55 were females. The mean age was 33.8 years ranging from 1 year to 75 years.

CNS TUBERCULOMA

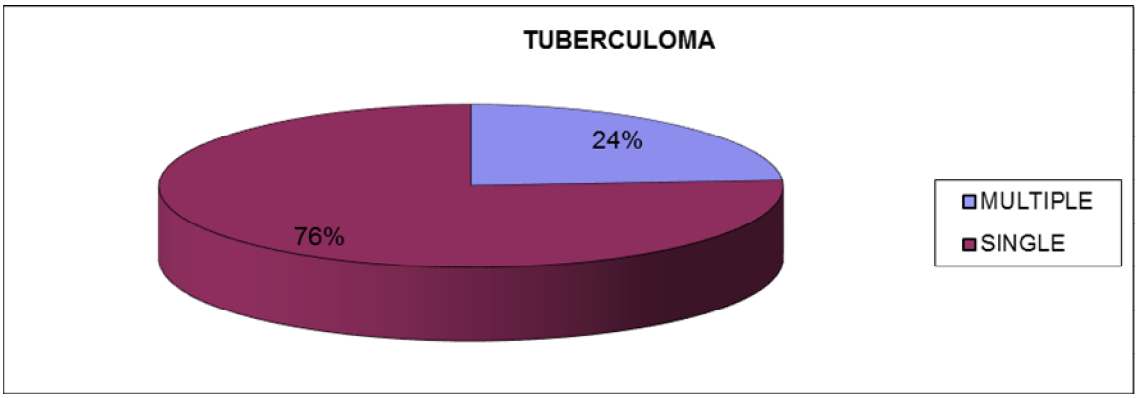


FIGURE 3: PIE CHART SHOWING THE % OF PATIENTS WITH NUMBER OF INTRACRANIAL TUBERCULOMAS SINGLE AND MULTIPLE

Out of 54 patients with tuberculoma, 76 % had single tuberculoma and 24 % had multiple tuberculomas.

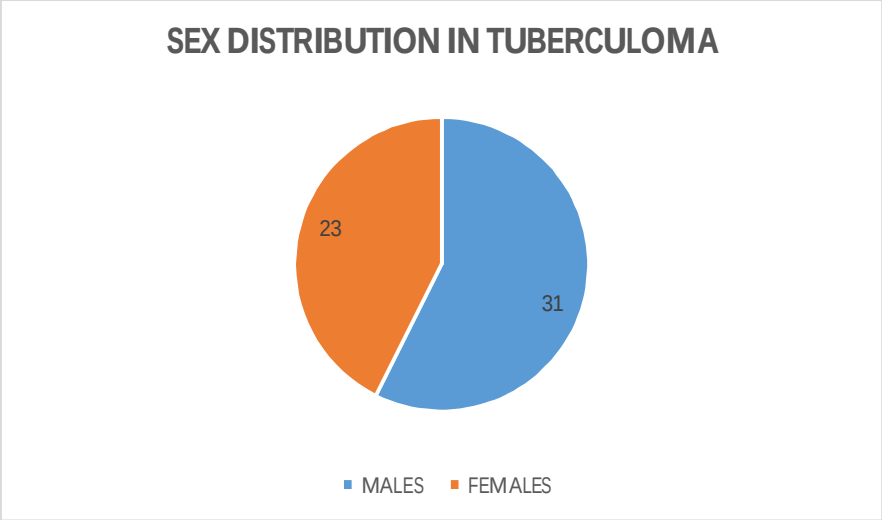


FIGURE 4: PIE CHART SHOWING THE SEX DISTRIBUTION OF INTRACRANIAL TUBERCULOMA

Out of the 54 patients, there were 31 males and 23 females.

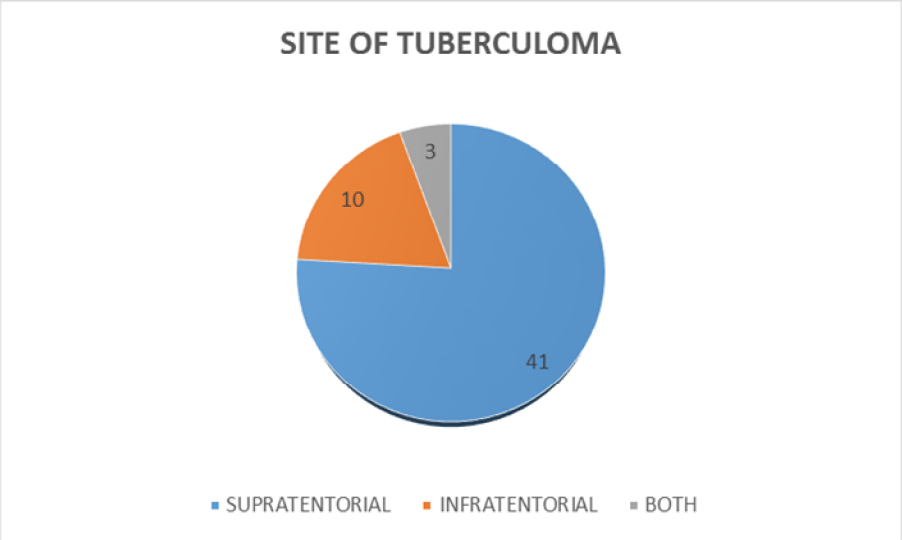


FIGURE 5: PIE CHART SHOWING THE INTRACRANIAL DISTRIBUTION OF TUBERCULOMAS

Out of 54 patients, 41 had supratentorial lesion, 10 had infratentorial lesion and 3 patients had both supratentorial and infratentorial tuberculomas.

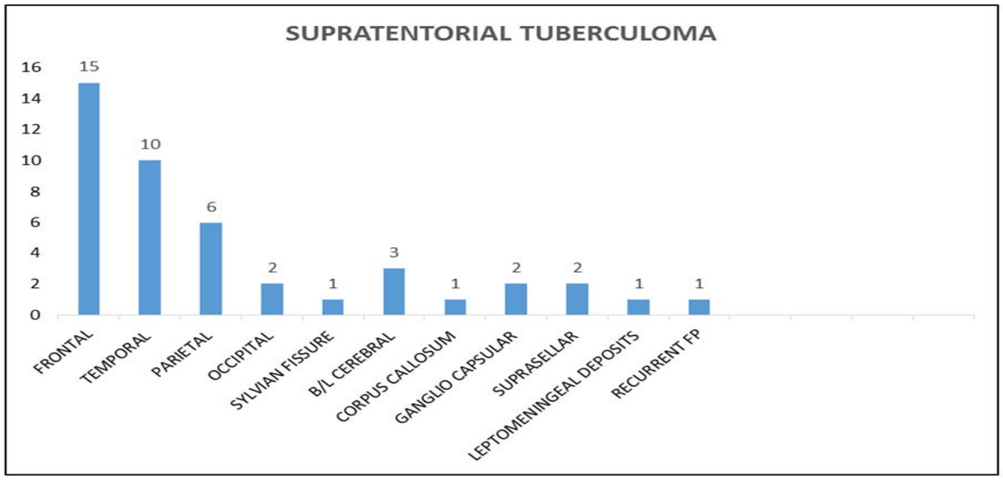


FIGURE 6: PIE CHART SHOWING THE DISTRIBUTION OF SUPRATENTORIAL TUBERCULOMAS

Out of 41 patients with supratentorial tuberuculomas. 15 had frontal lesion, 10 temporal, 6 parietal and 2 occipital. Bilateral cerebral tuberculomas was seen in 3 patients.

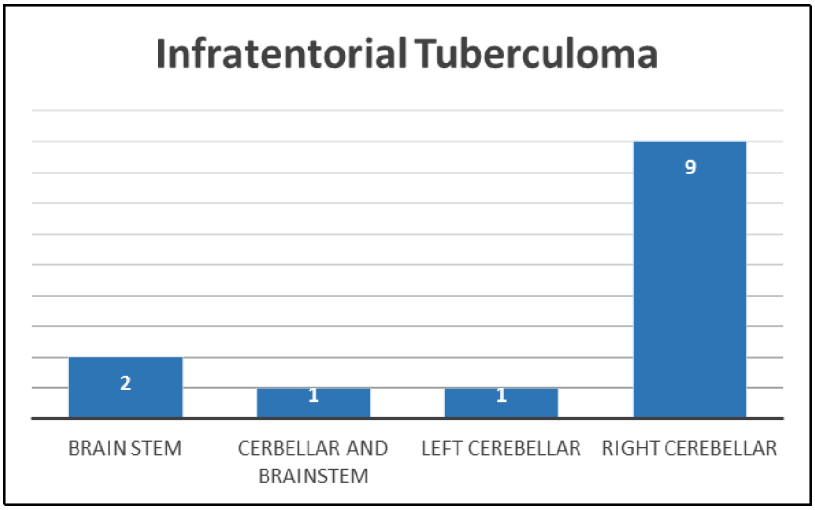


FIGURE 7: BAR DIAGRAM SHOWING THE DISTRUBUTION OF INFRATENTORIAL TUBERCULOMAS

Out of 13 infratentorial tuberculoma, there were 11 patients with cerebellar tuberculoma and 2 patients with lesion in the brain stem. 1 patients had both brain stem and cerebellar tuberculoma.

TABLE 1: TABLE SHOWING THE CLINICAL MANIFESTATIONS OF INTRACRANIAL TUBERCULOMAS AND THE TUBERCULOSIS DISEASE STATUS

CLINICAL MANIFESTATION	NO OF PATIENTS (TOTAL=54)	PERCENTAGE OF PATIENTS
SEIZURES	19	35.2%
FEVER	12	22.2%
HEADACHE	48	89%
ALTERED SENSORIUM	17	31.5%
MOTOR WEAKNESS/FOCAL DEFICIT	15	27.8%
CEREBELLAR SIGNS & SYMPTOMS	11	20.4%
CRANIAL NERVE PALSY	3	5.5%
LOSS OF WEIGHT & APPETITE	7	13%
CHEST XRAY FEATURES OF TUBERCULOSIS	5	9.2%
PRE-EXISTING TB MENINGITIS	4	7.4%
PRE-EXISTING PULMONARY TB	5	9.2%
PRIOR ATT	9	16.4%

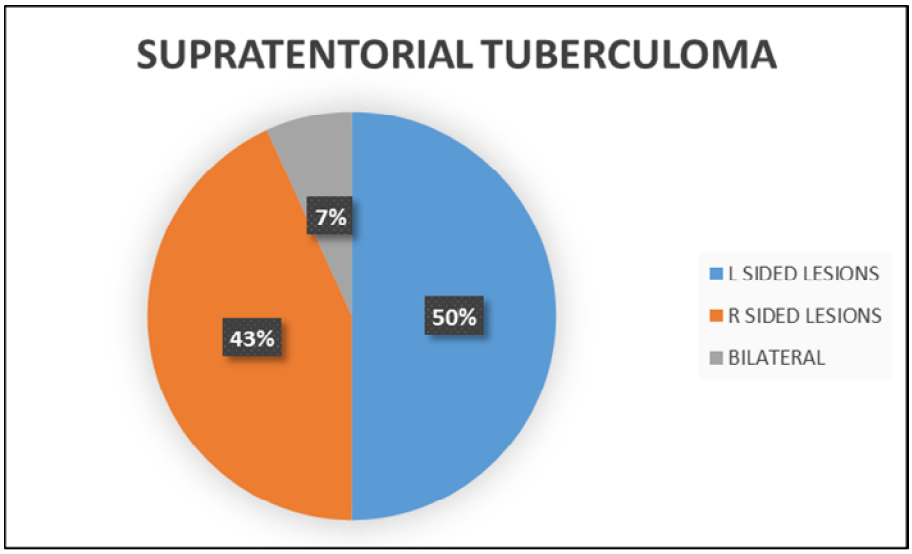


FIGURE 8: PIE CHART SHOWING THE SIDE DISTRIBUTION OF SUPRATENTORIAL TUBERCULOMAS

Out of the 54 patients with tuberculoma, 50% of patients had left sided tuberculomas, 43% had right sided lesions and 7% had bilateral lesions.

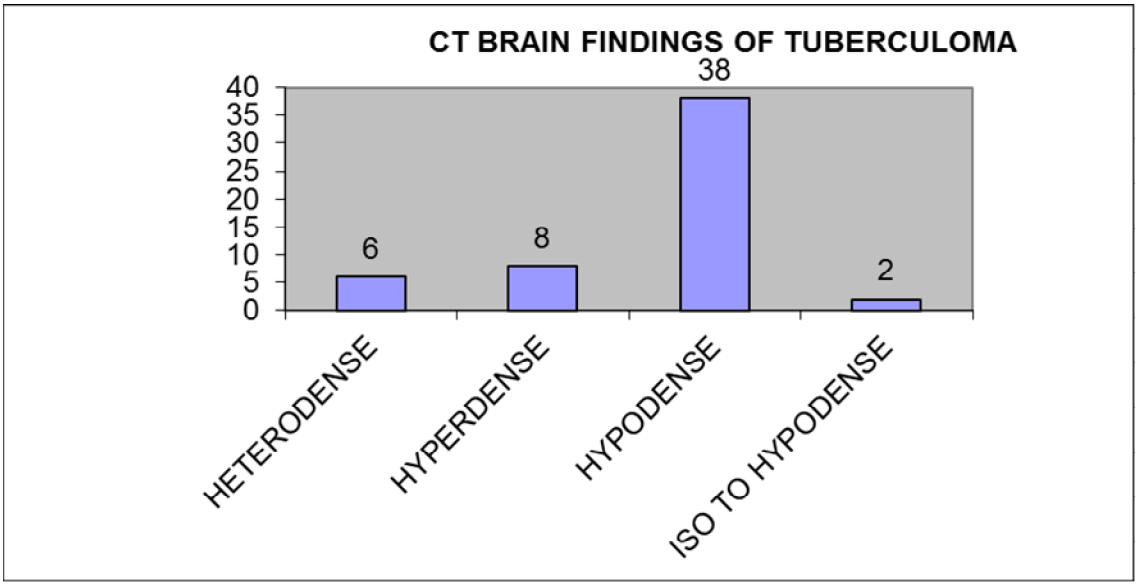


FIGURE 9: BAR DIAGRAM SHOWING THE PLAIN CT BRAIN FINDINGS OF PATIENTS WITH TUBERCULOMAS

Out of 54 cases, 38 cases had hypodense lesions on plain CT brain, hyperdense lesions in 8, mixed density in 6 cases .

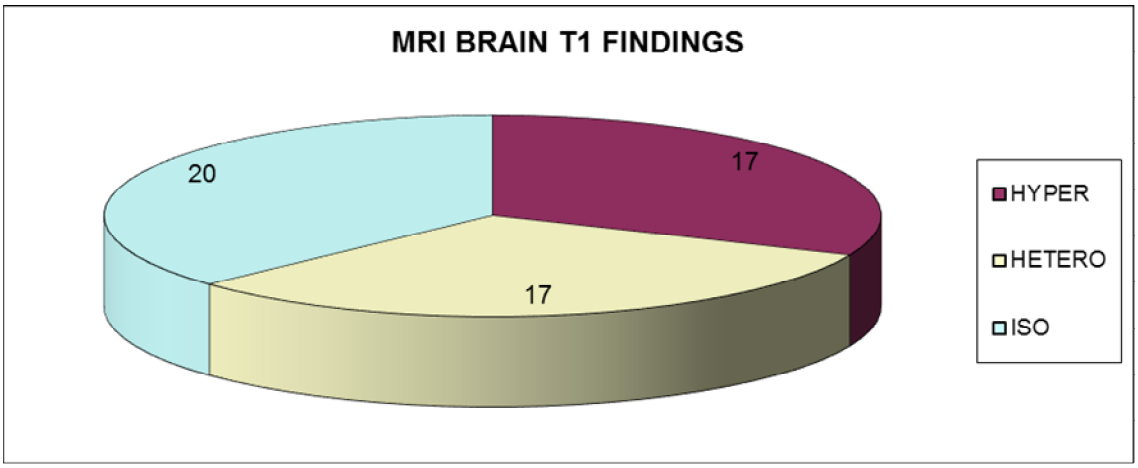


FIGURE 10: PIE CHART SHOWING MRI T1 FINDINGS OF TUBERCULOMAS

Out of the 54 cases of tuberculoma, 17 cases showed T1 hyperintenstiy, 20 were T1 iso and remaining 17 were heterointense.

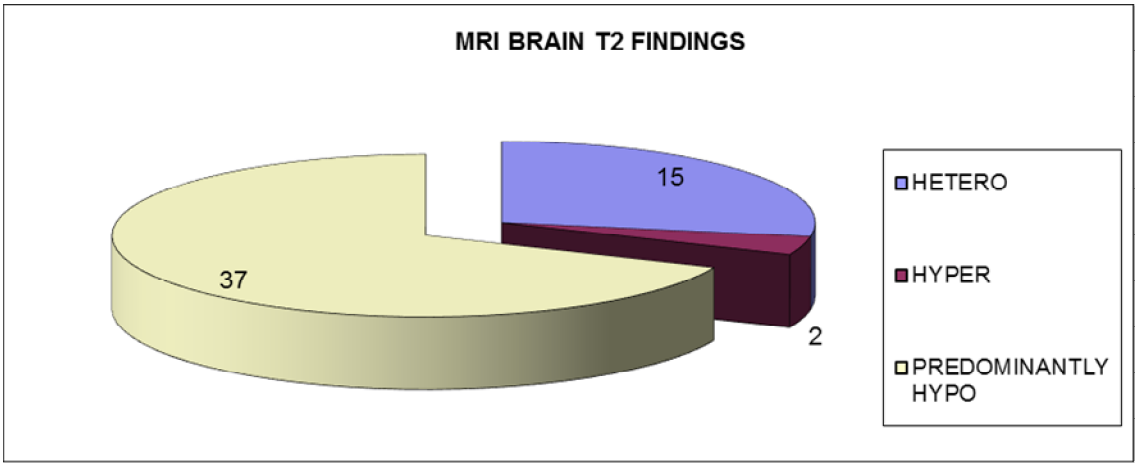


FIGURE 11: PIE CHART SHOWING MRI T2 FINDINGS

MRI T2 findings revealed predominantly hypo intense lesions in 37 patients, 15 cases with heterointense leisons and 2 with hyperintense lesions.

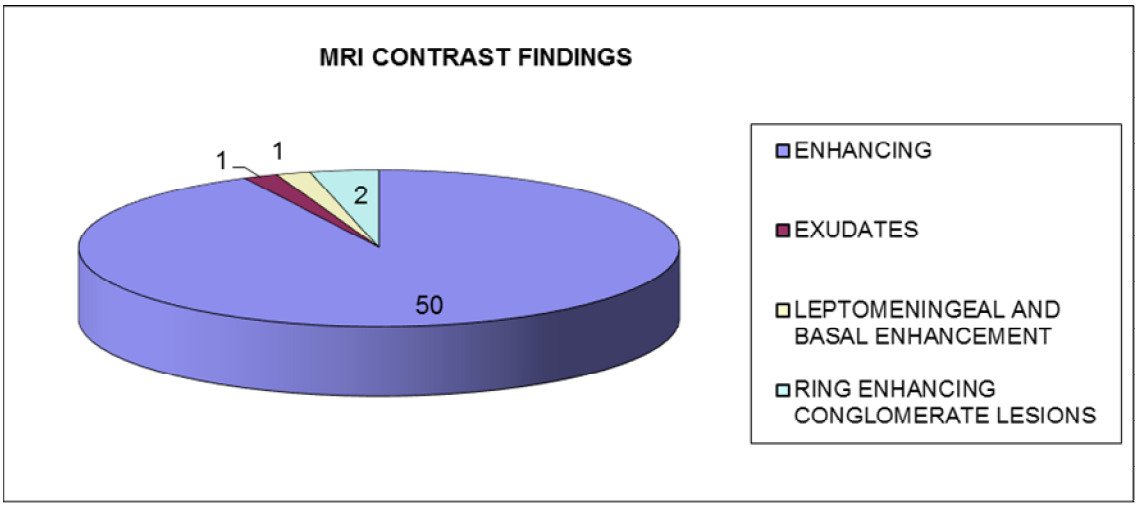


FIGURE 12: PIE CHART SHOWING MRI CONTRAST FINDINGS IN TUBERCULOMA

All the lesions were contrast enhancing with 2 cases of conglomerate lesions, 1 case with basal exudate and 1 case with leptomeningeal enhancement.

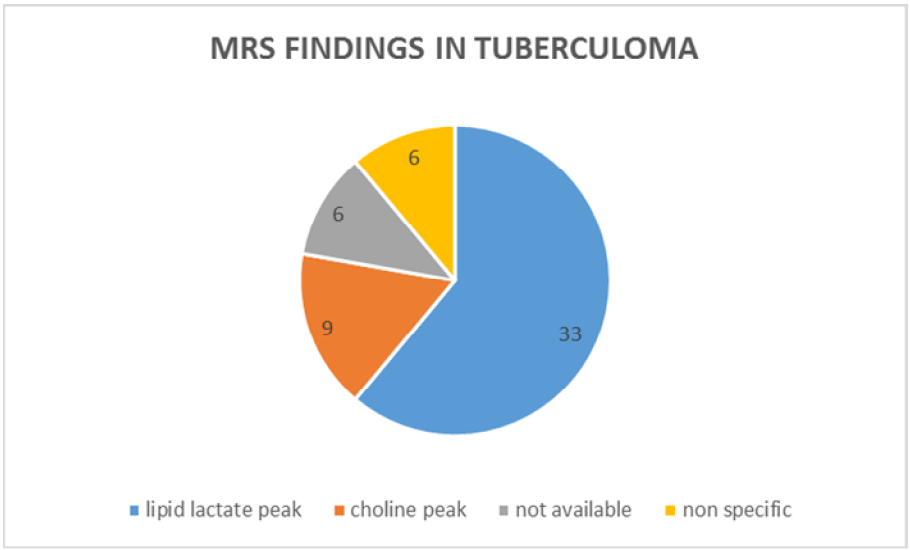


FIGURE 13: PIE CHART SHOWING THE MRS FINDING IN TUBERCULOMA

Out of the 54 patients, 33 patients had lipid lactate peak on MRS, Choline peak was seen in 9 patients. It was non specific in others. MRS details were not available in 6 patients.

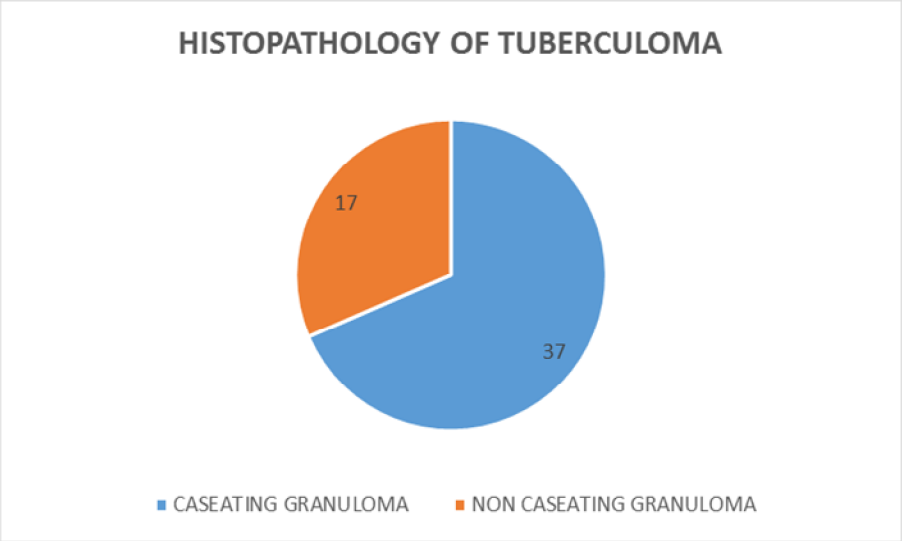


FIGURE 14: PIE CHART SHOWING THE HISTOPATHOLOGY OF TUBERCULOMA

Out of the 54 cases, 37 were caseating granulomas and 17 were non caseating.

TABLE 2: TABLE SHOWING THE COMPARISON OF MRS FINDING AND HISTOPATHOLOGY OF CNS GRANULOMA [Caseating/ non caseating Granuloma]

MRS FINDING	CASEATING GRANULOMA	NON CASEATING GRANULOMA	TOTAL
Lipid lactate peak	27	5	32
Lipid lactate peak with choline peak	-	1	1
Choline peak	2	9	11
Choline peak with NAA reduced	0	1	1
Non specific	3	1	4
Not available	5	-	5
TOTAL	37	17	54

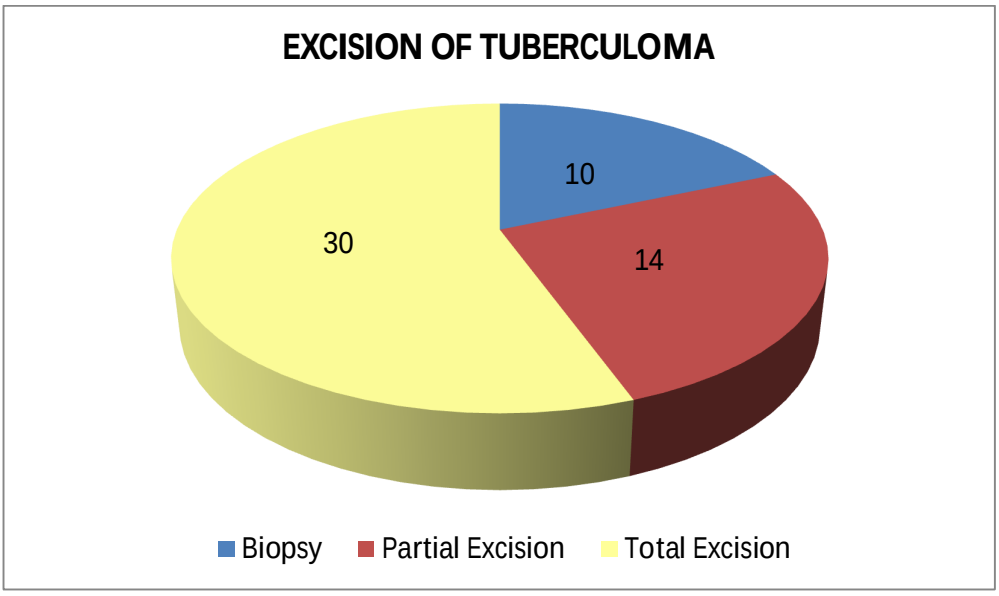


FIGURE 15: PIE CHART SHOWING THE SURGICAL EXCISION OF TUBERCULOMA

30 patients underwent craniotomy and total excision of the tuberculoma, partial excision was done in 14 patients and biopsy in 10 patients.

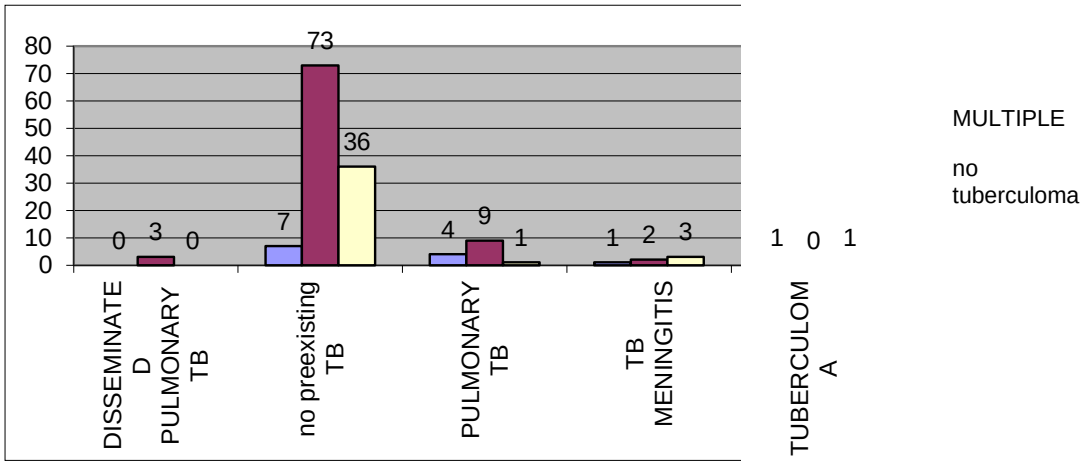


FIGURE 16: BAR DIAGRAM SHOWING THE PRE-EXISTING TUBERCULOSIS DISEASE STATUS IN PATIENTS WITH TUBERCULOMA

Out of the 54 patients with tuberculoma, co-exisiting pulmonary TB was present in 5 patients. 4 patients had TB meninigitis.

HYDROCEPHALUS IN CNS TUBERCULOSIS

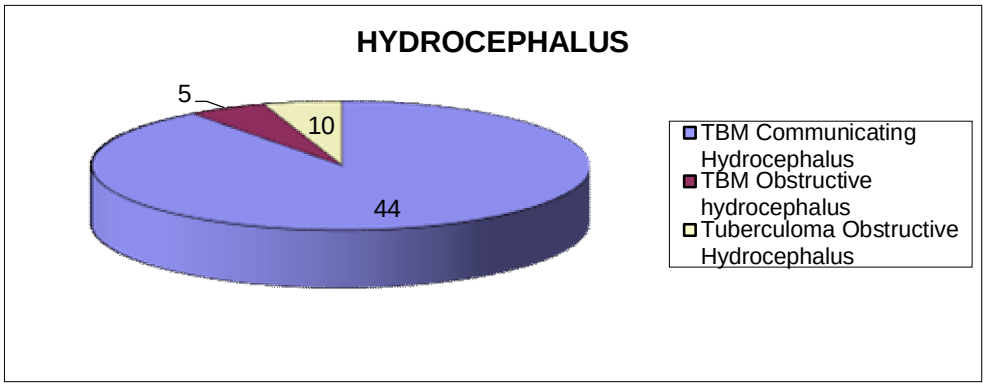


FIGURE17: PIE CHART SHOWING THE DISTRIBUTION OF THE TYPES OF HYDROCEPHALUS IN CNS TUBERCULOSIS

Out of 59 cases of Hydrocephalus 44 were post TBM communicating Hydrocephalus, 5 were TBM obstructive Hydrocephalus and 10 cases were obstructive Hydrocephalus caused by Tuberculoma.

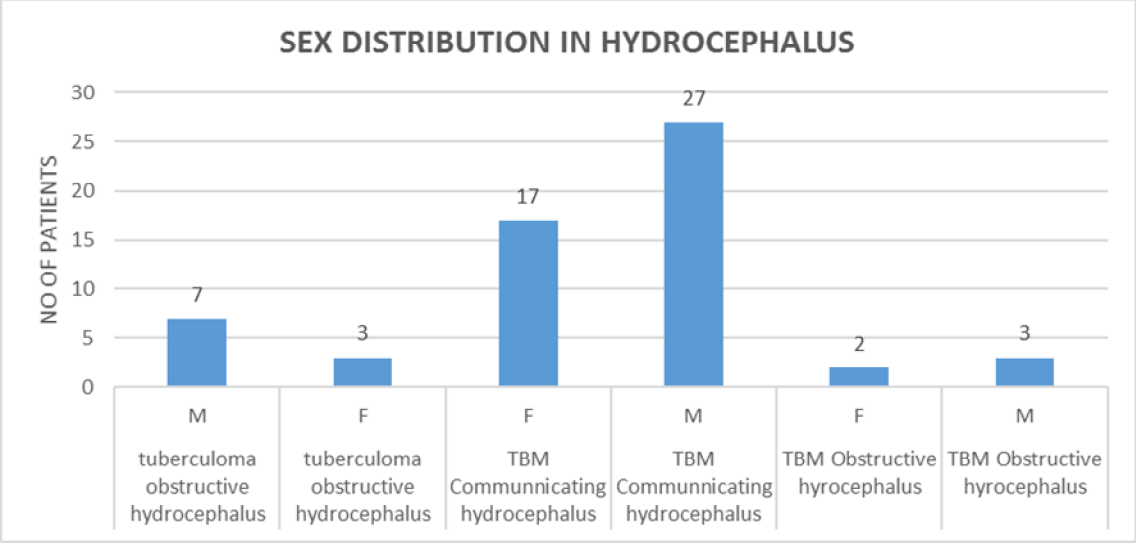


FIGURE 18: BAR DIAGRAM SHOWING THE GENDER PROFILE OF PATIENTS WITH TBM HYDROCEPHALUS

Out of the 49 cases of Post TBM hydrocephalus, there 30 were male patients and 19 female patients. Out of 10 cases of tuberculoma obstructive hydrocephalus 7 were males and 3 females.

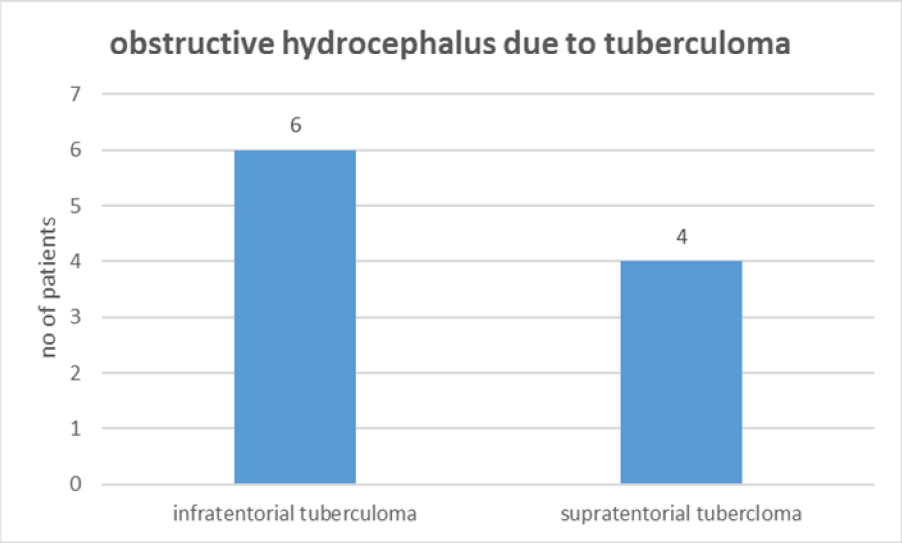


FIGURE 19: BAR DIAGRAM SHOWING THE DISTRIBUTION OF TUBERCULOMA CAUSING OBSTRUCTIVE HYDROCEPHALUS

Of the 10 cases of hydrocephalus caused by tuberculoma, there were 6 cases with infratentorial tuberculomas and 4 with supratentorial tuberculoma.

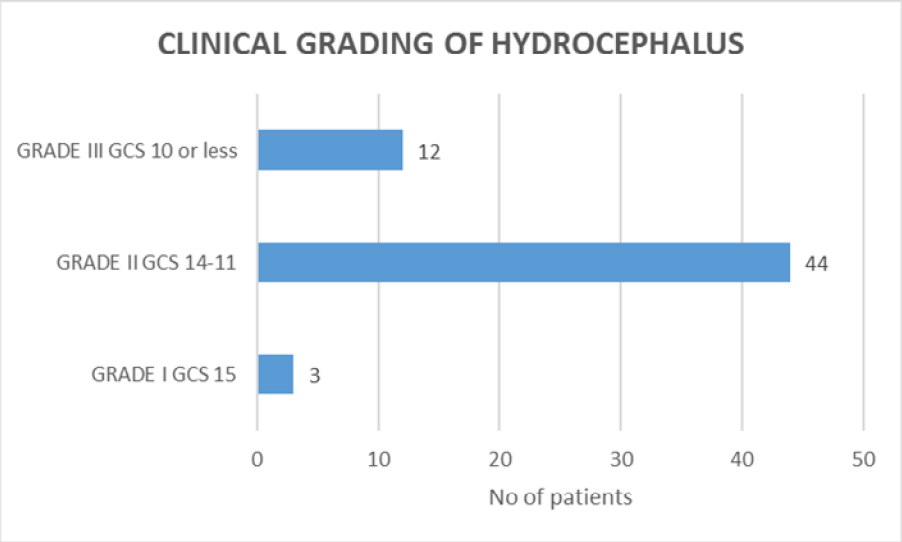


FIGURE 20: SHOWING THE CLINICAL GRADING OF PATIENTS WITH HYDROCEPHALUS

Based on the Modified British Research Council Clinical Criteria Grading, there were 44 patients in Grade II, 12 patients in Grade III and 3 in Grade I.

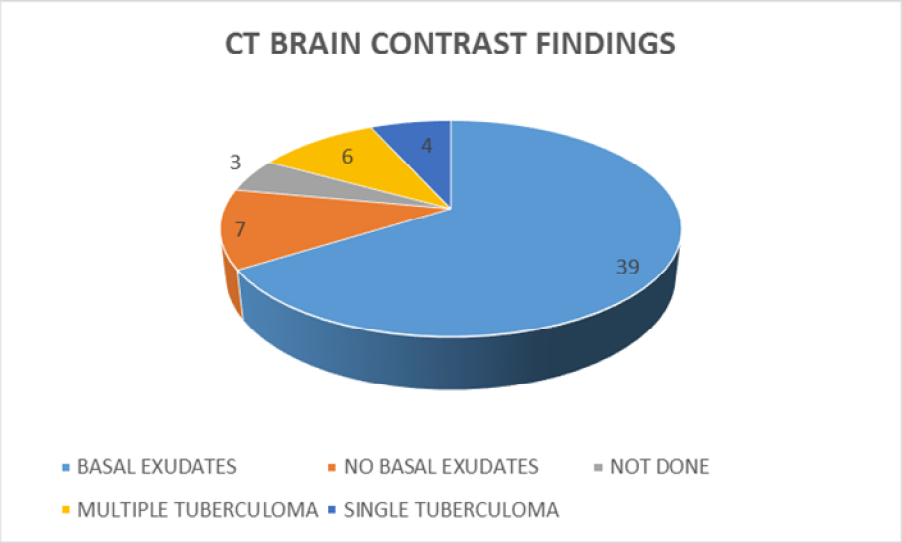


FIGURE 21: BAR DIAGRAM SHOWING THE CT BRAIN CONTRAST FINDINGS IN PATIENTS WITH HYDROCEPHALUS

Out of the 59 cases, basal exudates were seen in 39 patients and multiple tuberculomas in 6 patients**.** 4 cases had single infratentorial tuberculoma and no basal exudates was seen in in 7 patients

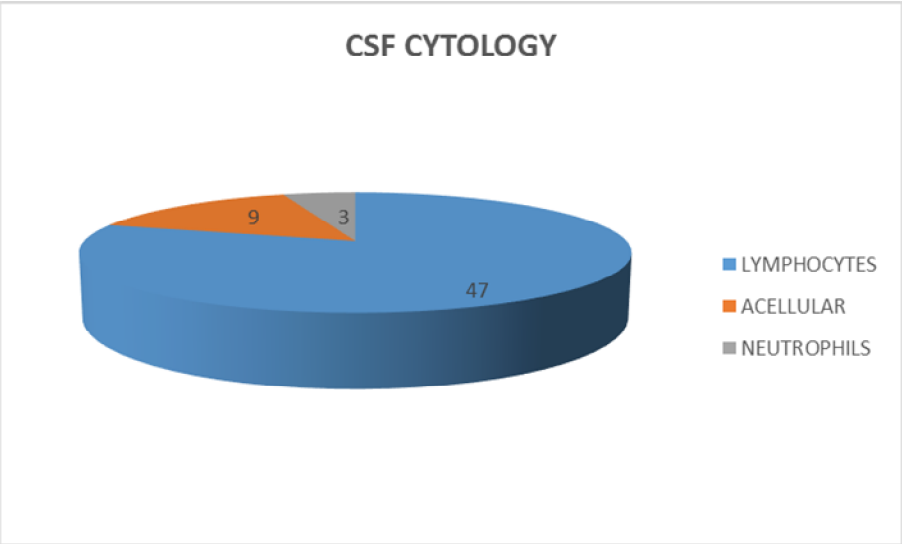


FIGURE 22: PIE CHART SHOWING THE CSF CYTOLOGY FINDINGS HYDROCEPHALUS CASES

Out of the 59 cases of hydrocephalus, 47 cases had a cellular smear with Lymphocyte preponderance, 9 cases had Neutrophils and 3 were Acellular.

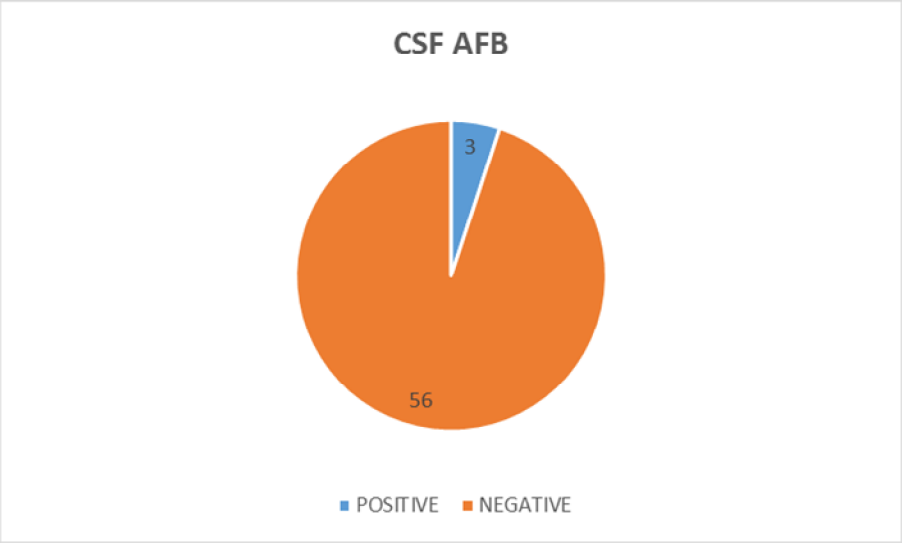


FIGURE 23: PIE CHART SHOWING THE CSF AFB STATUS IN PATIENTS WITH HYDROCEPHALUS

There were 3 cases with CSF AFB positive, the remaining 56 cases were negative for AFB in CSF.

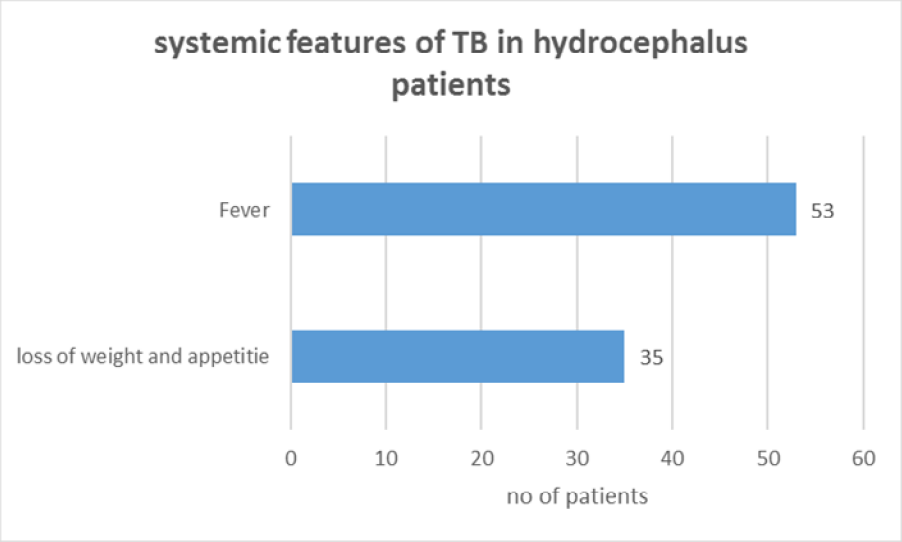


FIGURE 24: BAR DIAGRAM SHOWING THE GENERALISED SYSTEMIC SYMPTOMS IN PATIENTS WITH HYDROCEPHALUS

Out of the 59 cases, 53 patients had history of fever and 35 patients had loss of weight and appetite.

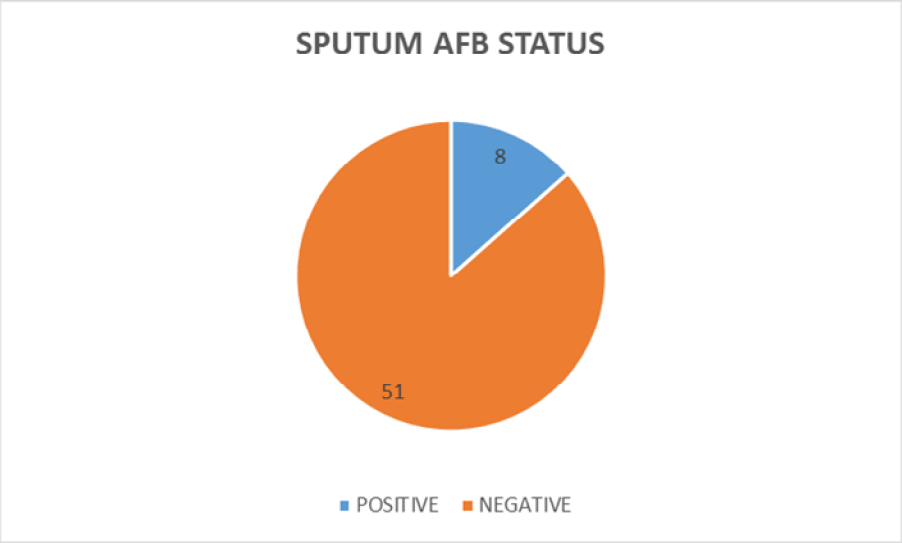


FIGURE 25: PIE CHART SHOWING THE SPUTUM AFB STATUS IN PATIENTS WITH HYDROCEPHALUS

8 case were positive for sputum AFB and remaining 51 cases were AFB negative.

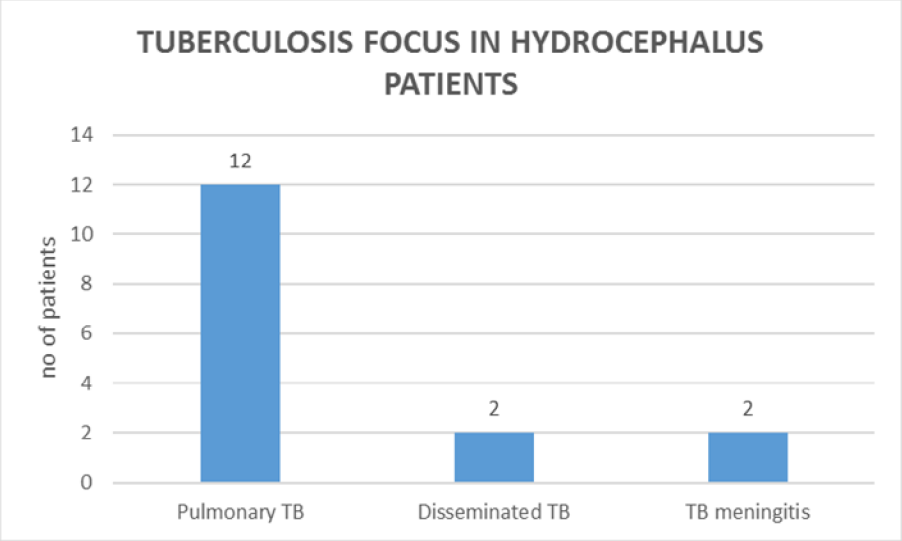


FIGURE 26: BAR DIAGRAM SHOWING THE PRE EXISTING TUBERCULOSIS FOCUS IN PATIENTS WITH HYDROCEPHALUS

Of the 59 cases, 12 patients had pulmonary tuberculosis, 2 patients had prior TB meningitis and 2 cases had disseminated TB.

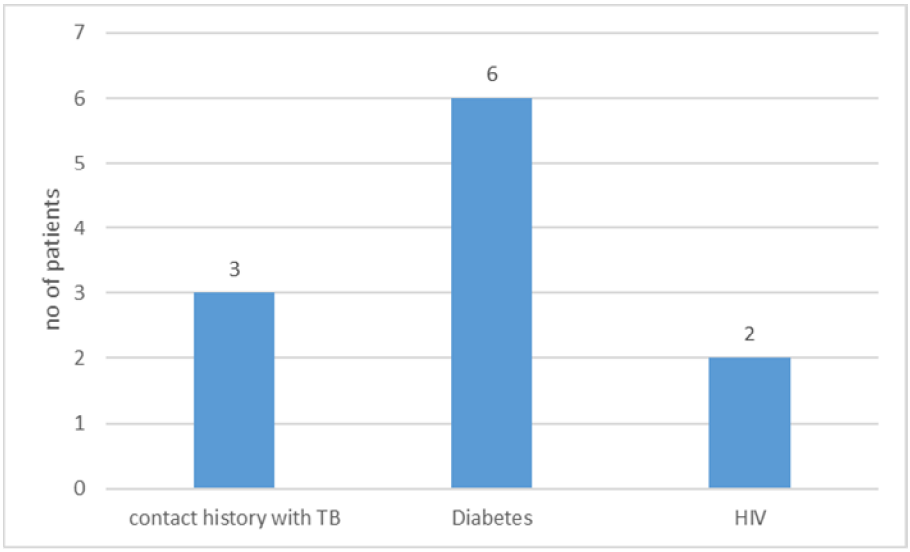


FIGURE 27: BAR DIAGRAM SHOWING THE ASSOCIATED RISK FACTORS IN PATIENTS WITH HYDROCEPHALUS

3 patients had positive contact history with tuberculosis, 6 patients had co-existing Diabetes and 2 patients were positive for HIV.

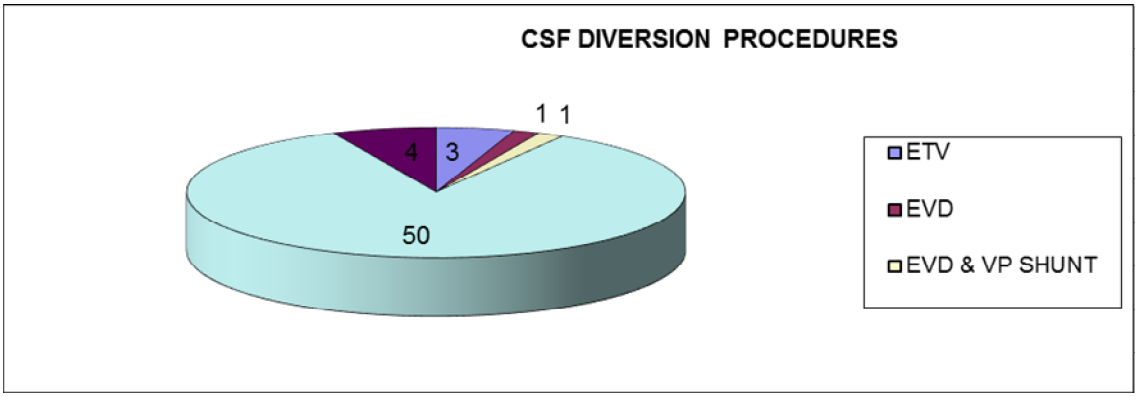


FIGURE 28 : PIE CHART SHOWING THE CSF DIVERSION PROCEDURES DONE IN PATIENTS WITH HYDROCEPHALUS

Out of 59 cases of Hydrocephalus, right VP Shunt was done for 50 cases, 3 ETVs, 4 EVDs, 1 Shunt revision and 1 EVD followed by VP shunt.

POTT'S SPINE

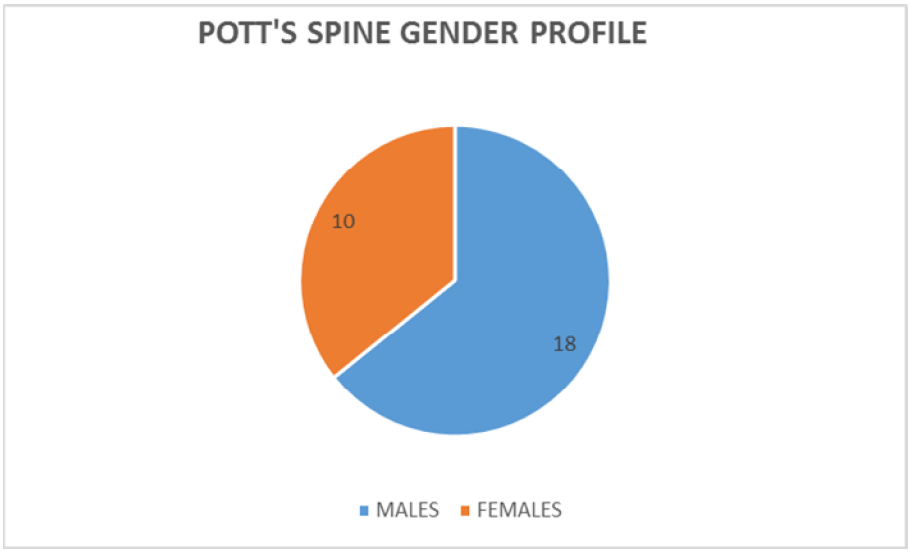


FIGURE 29: PIE CHART SHOWING THE SEX DISTRUBUTION OF POTT'S SPINE

Out of the 28 patients with Pott's spine, 18 were male and 10 were female.

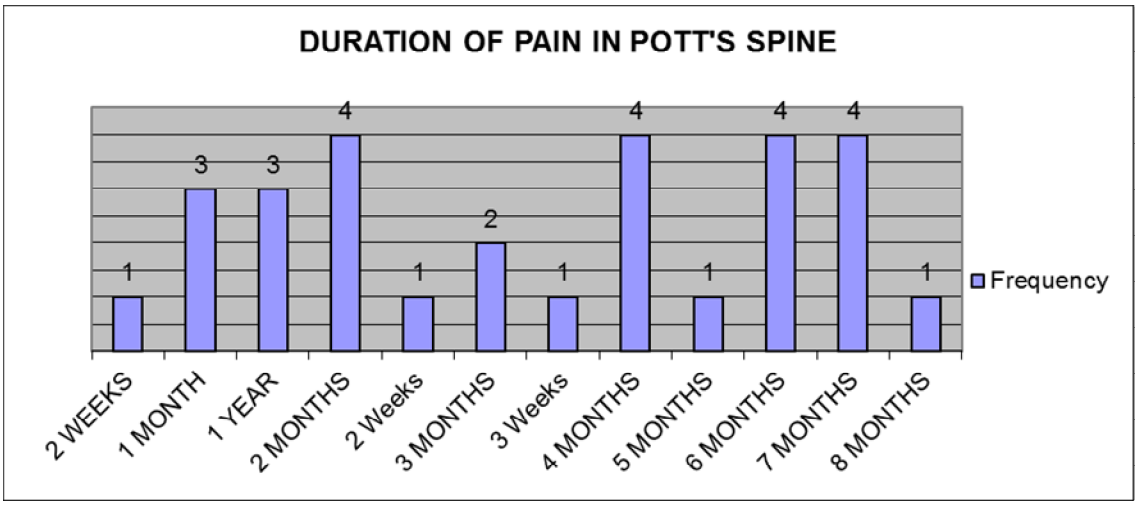


FIGURE 30: BAR DIAGRAM SHOWING THE DURATION OF PAIN IN POTT'S SPINE PATIENTS

The duration of symtoms of back pain/neck pain in patients with spinal tuberculosis was a minimum of 2 weeks and maximum of 1 year.

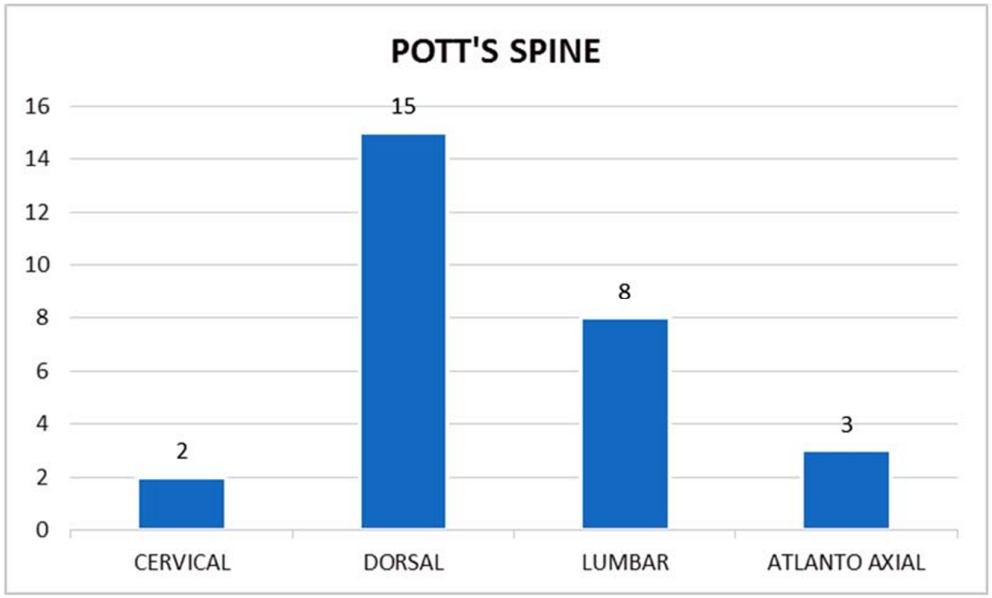


FIGURE 31: BAR DIAGRAM SHOWING THE SITE DISTRIBUTION OF POTT'S SPINE

Out of the 28 patients with pott's spine, 15 cases had dorsal spine lesion, 8 had pott's spine of the lumbar region and 2 cases in the cervical region. There were 3 cases of atlantoaxial tuebrculosis.

TABLE 3: TABLE SHOWING THE CLINICAL MANIFESTATIONS OF POTT'S SPINE PATIENTS

CLINICAL MANIFESTATION	NUMBER OF PATIENTS (TOTAL=28)	PERCENTAGE
Fever	10	35.7%
Loss of weight/loss of appetite	9	32.1%
Paraparesis	12	42.8%
Paraplegia	1	0.04%
Quadriparesis	4	14.2%
Sensory symptoms	16	57.1%
Back pain	23	82.1%
Neck pain	5	17.8%
Bladder symptoms	4	14.2%
Paraspinal swelling	4	14.2%
Spinal deformity	3	10.7%
Pre existing TB- pulmonary	1	0.04%

TABLE 4: TABLE SHOWING THE MRI SPINE FINDINGS IN PATIENTS WITH SPINAL TUBERCULOSIS

1.	L4 COLLAPSE WITH PARAVERTEBRAL ABSCESS
2.	D10 COLLAPSE WITH PARAVERTEBRAL ABSCESS
3.	C5C6 POTTS SPINE WITH PARAVERTEBRAL ABSCESS
4.	D8-D10 ABSCESS
5.	D8 COLLAPSE WITH PARAVERTEBRAL ABSCESS
6.	D10COLLAPSE WITH PARAVERTEBRAL ABSCESS
7.	L2 COLLAPSE WITH PARASPINAL ABSCESS WITH CORD COMPRESSION
8.	L2 COLLAPSE WITH PARASPINAL ABSCESS WITH CORD COMPRESSION
9.	L2 COLLAPSE WITH PARAVERTEBRAL COLLECTION
10.	C1 C2 SUBLUXATION WITH PREVERTEBRAL COLLECTION
11.	C6-C8 EXTRADURAL COLLECTION WITH C5-C7 SPONDYLITIS
12.	D9 COLLAPSE NO CORD CHANGES
13.	L2 POTTS SPINE WITH PARASPINAL ABSCESS WITH CORD COMPRESSION
14.	D7 COLLAPSE WITH PARASPINAL ABSCESS
15.	D8 COLLAPSE WITH PARAVERTEBRAL ABSCESS
16.	L1L2 SPONDYLOLISTHESIS,B/L PSOAS ABSCESS
17.	L5-S1 POTTS SPINE, DISC PROLAPSE WITH RIGHT PSOAS ABSCESS
18.	L4L5 SPONDYLODISCITIS WITH SURROUNDING SOFT TISSUE
19.	C1C2 LYTIC LESION IN LATERAL MASS WITH PREVERTEBRAL SOFT TISSUE
20.	L1L2 HETEROGENOUS LESION INVOLVING BODY AND SPINE WITH EPIDURAL ABSCESS
21.	D4 COLLAPSE WITH PRE AND PARA VERTEBRAL ABSCESS D4 TO D6
22.	D11 COLLAPSE WITH PARAVERTEBRAL ABSCESS

23.	D10 TO L3 PARASPINAL ABSCESS
24.	D7 COLLAPSE WITH PARASPINAL ABSCESS
25.	D10 COLLAPSE WITH PARAVERTEBRAL ABSCESS
26.	C1C2 POTT'S SPINE WITH PREVERTEBRAL ABSCESS
27.	D7 COLLAPSE WITH PARASPINAL ABSCESS
28.	D8D9 POTT'S SPINE WITH D3-L1 PARAVERTBERAL ABSCESS

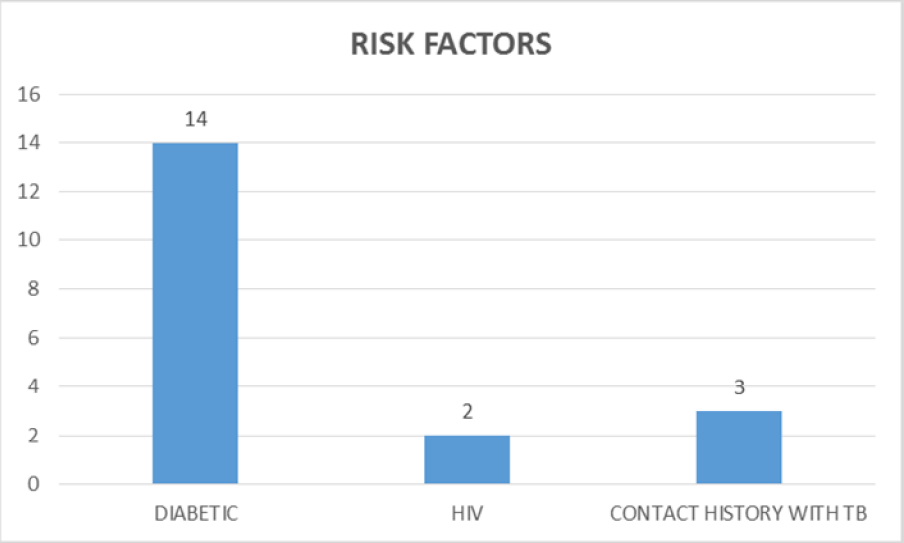


FIGURE 32: BAR DIAGRAM SHOWING THE CO-EXISTING RISK FACTORS IN PATIENTS WITH CNS TUBERCULOSIS

Out of the 141 cases of CNS Tuberculosis, 14 patients were diabetic, 2 patients were HIV positive and 3 patients had positive contact history with TB.

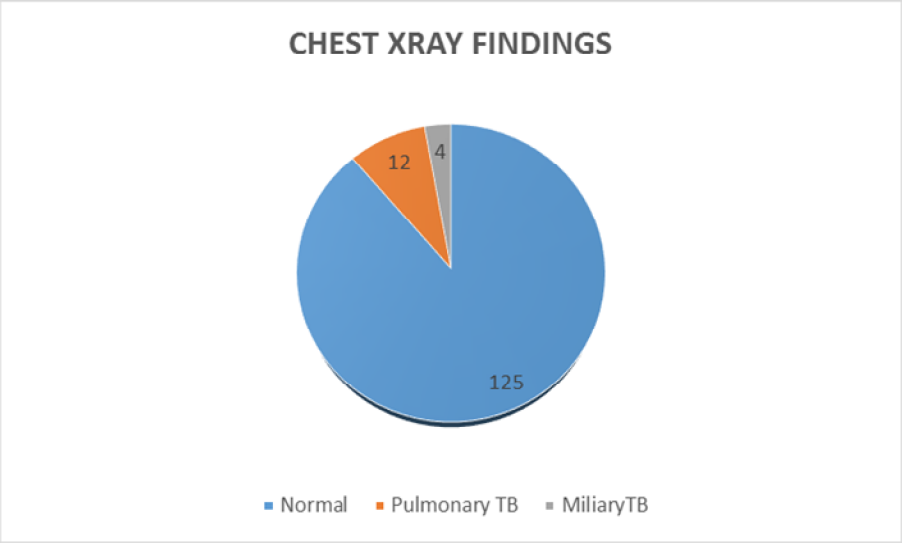


FIGURE 33: PIE CHART SHOWING THE PULMONARY STATUS OF PATIENTS WITH CNS TUEBRCULOSIS

Out of the 141 patients, 12 patients had pulmonary tuberculosis, 4 patients had bilateral miliary mottling. Chest Xray was normal in 125 patients.

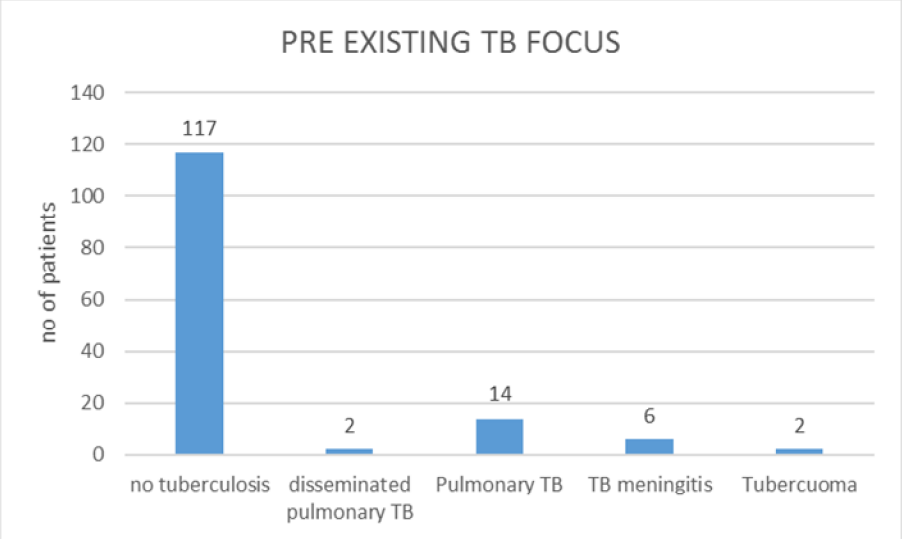


FIGURE 34: BAR DIAGRAM SHOWING THE PRE-EXISITING TUBERCULOSIS FOCUS IN PATIENTS WITH CNS TB

Out of the 141 patients. 14 patients had pre-existing pulmonary tuberculosis, 2 patients had disseminated PTB, 6 patients had pre-existing TB meningitis and 2 patients had tuberculoma.

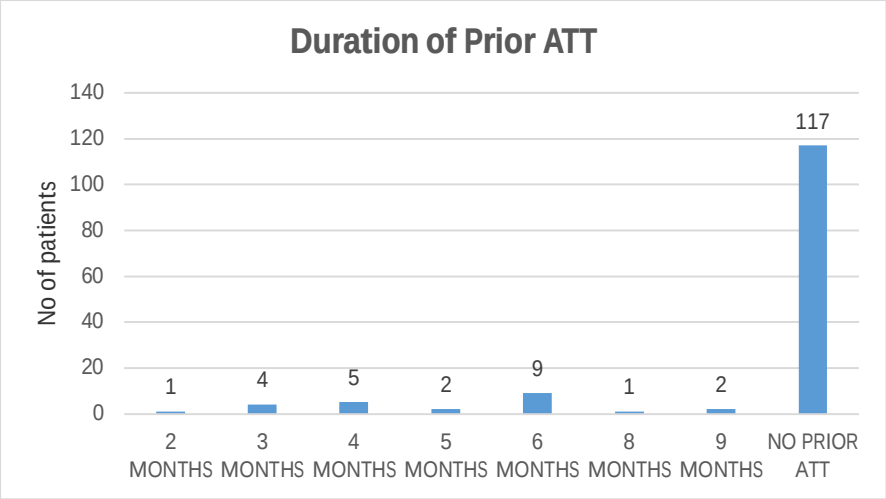


FIGURE 35: BAR DIAGRAM SHOWING THE DURATION OF PRIOR ATT IN PATIENTS WITH CNS TB

Out of the 141 patients with CNS TB, 24 patients were on ATT. 9 Patients had completed 6 months of ATT. The shortest duration was 1 month and the longest was 9 months with an average of 3.4 months of prior ATT at the time of diagnosis with CNS TB.

Figure 36

Figure 37

Figure 38

Figure 36 showing T1 peripheral ring enhancing tuberculoma in the right cerebellum.

Figure 37 showing the lesion which is T2 hypointense with perilesional edema and fourth ventricle compression.

Figure 38 showing the lesion which is T1 hyperintense with central hypointensity

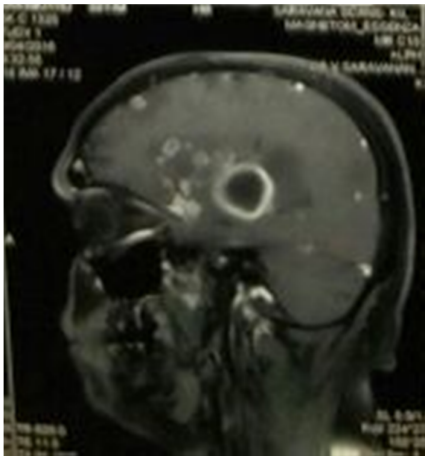


Figure 39

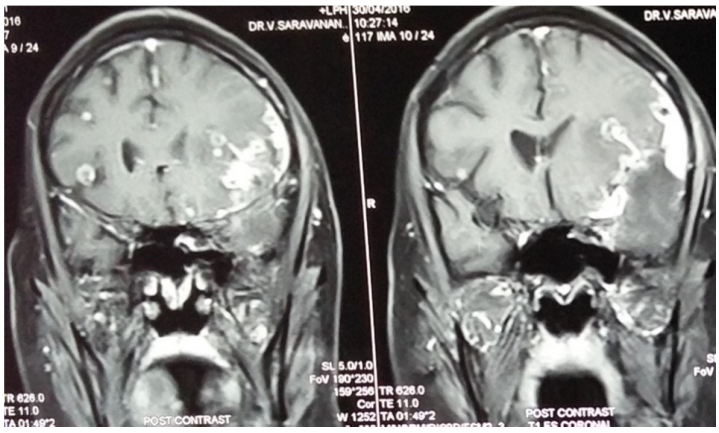
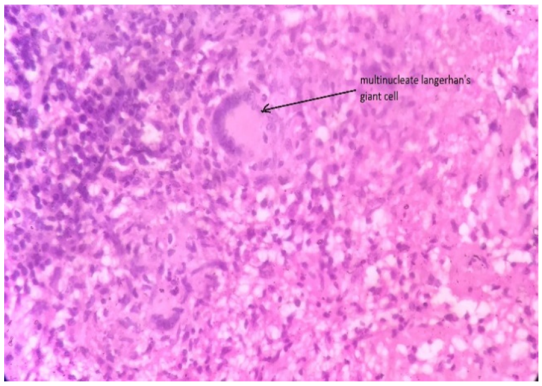
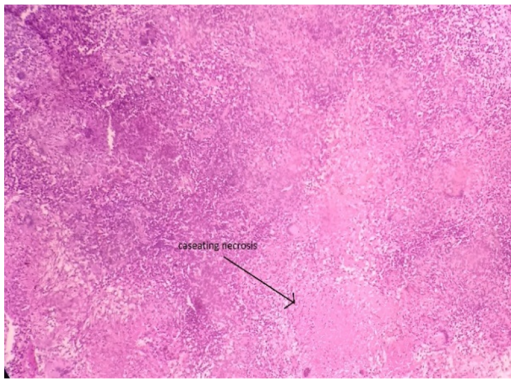


Figure 40

Figure 39 showing multiple ring enhancing suprasellar tuberculomas

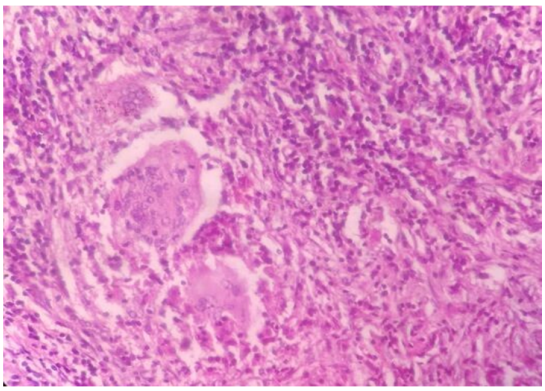
Figure 40 showing mutiple tuberculomas with basal exudates in the left sylvian cistern and leptomeningeal enhancement.

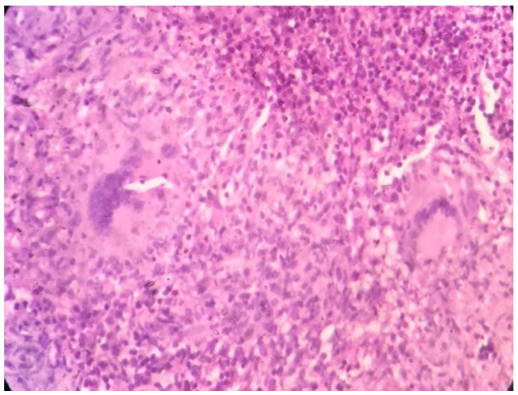




Figures 41 **Figures 42**

Figures 41 & 42 showing caseating granuloma. Caseating necrosis is seen surrounded by multinucleate giant cells and lypmhocytes in the back ground





Figures 43 **Figures 44**

Figures 43 & 44 showing Non caseating granuloma. Mulinucleate giant cells are seen surrounded by lymphocytes.

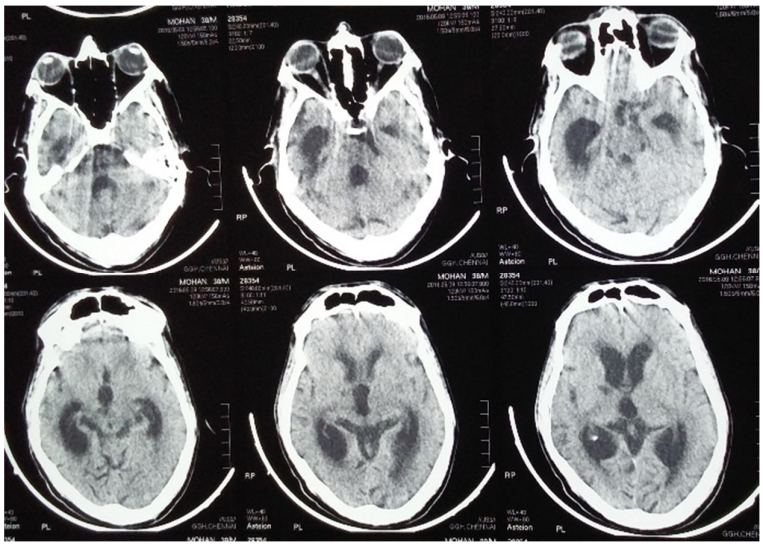


Figure 45 CT brain plain showing TBM communicating hydrocephalus.

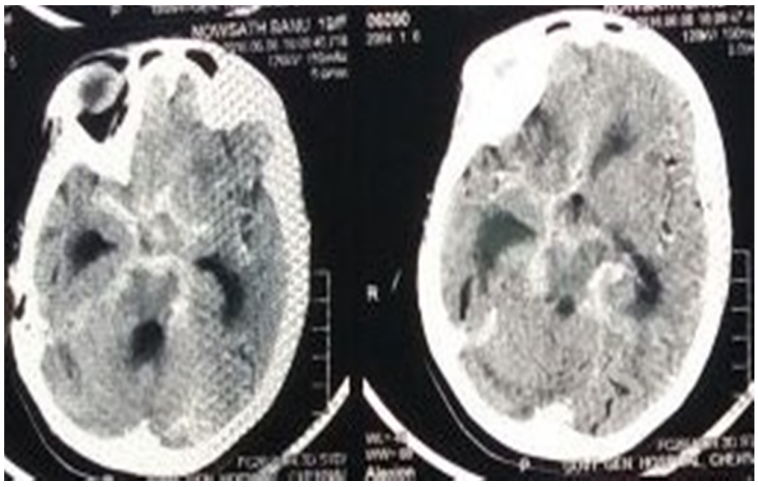


Figure 46 CT Brain contrast showing thick basal exudates.

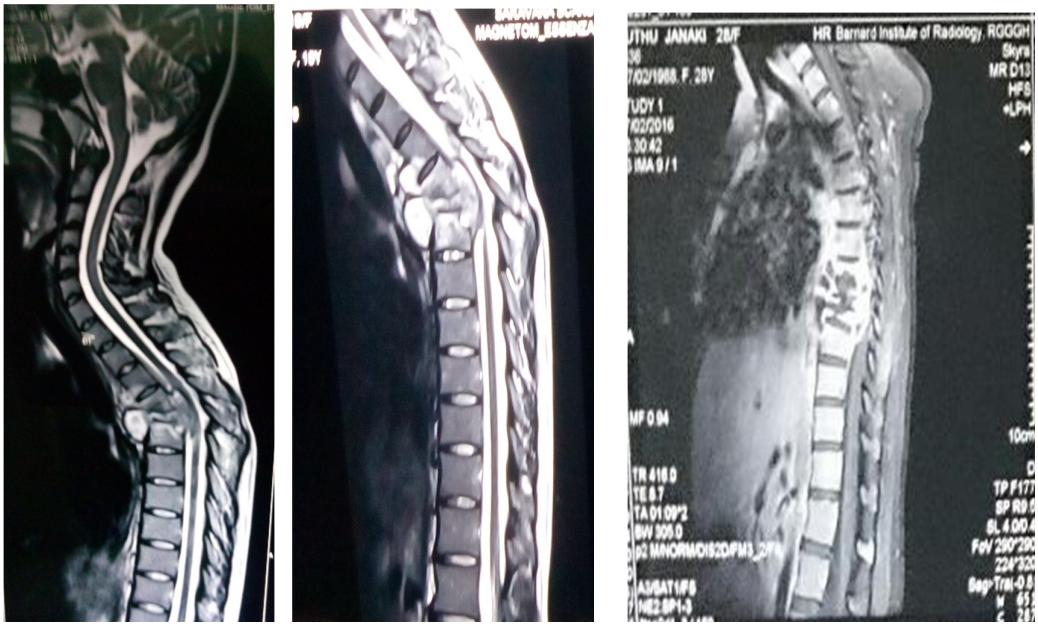


Figure 47, 48 & 49 showing Dorsal Pott's spine with verterbal body collapse, paravertebral abscess and cord compression.

Analysis and Discussion

ANALYSIS AND DISCUSSION

CNS TUBERCULOMA

In this study we have found out that majority of the patients presented with solitary tuberculoma (76%), most common in the supratentorial compartment (41 cases out of 54). Frontal lobe involvment was seen in maximum number of patients (15 cases) and there was a minimal predeliction for the left side (more than 50%).

Seizure was the presenting feature in 35% of patients. 15 patients (27.8%) presented with hemiparesis and 11 cases with infratentorial tuberculoma had cerebellar signs and symptoms. Headache was the commonest manifestation of tuberculoma in our study, and was seen in 48 patients (89%). Generalised symtoms of tuberculosis was seen in 22% of the patients of which fever was seen in 12 patients and loss of weight and appetite occurred in 7 patients. Majority of the patients presented with non specific symptoms and signs without any systemic clinical features of tuberculosis and therefore a high degree of suspicion is required in the diagnosis of tuberculoma and is always to be considered in a highly prevalent and endemic region such as ours.

Infratentorial tuberculoma was seen in 13 patients of which 2 were in the brain stem and the remaining 11 were in the cerebellum.

Obstructive hydrocephalus was seen in 6 patients with infratentorial tuberculomas and in 4 patients with multiple suprasellar tuberculomas.

Plain CT Brain showed Hypodense Lesions in 38 patients, Heterodense in 6 patients, Iso to Hyperdense in 2 patients and hyperdense in 8 cases. 49 patients had ring enhancing lesion on CT Brain contrast. 2 patients had multiple ring lesions and they were located close to the basal cisterns. 2 patients had basal exudates in addition to the tuberculomas. 3 patients with multiple ring lesions and basal exudates presented with obstructive Hydrocephalus.

MRI T1 images showed isointense lesions in 20 patients and hyperintense in 17 patients. The rest (17) were of mixed intensity. Correspondingly the MRI T2 finding was predominently hypointense in 37 patients, while 15 patients had heterointense lesions and 2 patients had hyper intense lesions. All the Lesions were contrast enhancing. MRS showed predominent lipid lactate peak in 33 patients. Choline peak was seen in 9 patients and it was non specific in others. The MRI features of those patients who had choline peak on MRS and T1, T2 heterointense lesions were suspicious of tumours.

Total excision was done in 30 patients in whom the lesion involved non eloquent areas and cerebellum. Partial excision was done in 14

patients and biopsy of the lesion in 10 cases. This included deep seated lesions in the thalamic and gangliocapsular region and tuberculomas of the eloquent areas.

Histopathologically, caseating granuloma was seen in maximum number of patients [37]. Non caseating granuloma occured in 17. The pathological type of granuloma corelated with the pre-operative MRI findings. This is in accordance with the study done by Kim et al comparing the pathology and MRI findings of tuberculoma [17].

Co-existing Pulmonary TB was present in 5 cases (9.2%). 4 cases had pre-existing TB meningitis and a total of 9 cases had prior ATT Therapy. Chest X-ray was abnormal in 5 patients, all of whom had pre-existing pulmonary tuberculosis. None of the 5 patients with pulmonary tuberculosis had evidence of active tuberculosis infection. No new pulmonary or extra pulmonary TB focus was detected in the remaining 51 patients who presented with CNS tuberculoma.

HYDROCEPHALUS

There were 59 cases of hydrocephalus in this study. 21 cases occured in females and 38 cases in males. The age of the patients ranged between 1 year and 65 years with average of 31.3 years. There were 12 cases in the pediatric age group (age less than 12 years).

Post TBM communicating hydrocephalus was the commonest type seen in 44 patients (74.6%). There were 5 patients with TBM obstructive hydrocephalus and 10 patients with obstructive hydrocephalus caused by tuberculomas.

Of the 10 patients with obstructive hydrocephalus caused by tuberculoma, 6 patients had infratentorial tuberculomas and 4 had multiple suprasellar tuberculomas.

As per the British Medical Research Council Clinical Grading Criteria, there were 3 patients in Grade I (GCS 15), 44 patients in Grade II (GCS 14-11) and 12 patients in Grade III (GCS 10 and less). All the hydrocephalus patients had signs and symptoms of raised ICT. In addition, 53 patients had fever and 35 patients had loss of weight and appetite.

CT brain contrast showed basal exudates in 39 patients (66%). Majority of the patients had lymphocytes in CSF (47 cases). The CSF cytology revealed neutrophils in 9 cases. Only 3 cases had AFB positivity in the CSF. Majority of the patients had high protein and normal or low sugar levels in CSF.

Pre-existing pulmonary TB was seen in 12 patients. 2 cases had disseminated tuberculosis and presented in poor clinical grade (GCS less than 10- Grade III).

Only 3 patients had positive contact history with tuberculosis and 6 patients had co-existing diabetes. There were 2 patients with HIV both of whom had disseminated tuberculosis and presented with GCS less than 9.

Out of 59 cases of hydrocephalus, right VP Shunt was done in 50 cases, 3 patients underwent ETV, 4 patients underwent EVD, 1 patient had to undergo a Shunt revision and 1 patient had to undergo EVD followed by VP shunt.

POTT'S SPINE

There were a total of 28 cases of Pott's spine included in this study out of which 18 cases occured in males and 10 cases in females.

Dorsal spine was the commonest site of involvement, seen in 15 patients. Lumbar spine was the next commonly involved site with 8 cases. There were 2 cases with cervical spine involvement and 3 cases of atlantoaxial tuberculosis.

Back pain was the commest manifestation of Pott's spine, seen in 82% of the patients. The duration of pain in our study ranged from 2

weeks to 1 year with an average duration of 4 months at the time of diagnosis.

Motor weakness occured in 16 patients, out of whom one patient had paraplegia. All the 3 cases of atlanto-axial tuberculosis presented with quadriparesis and features of cervical compressive myelopathy. Hence, tuberculosis is to be considered in the diagnosis of a cervical compressive pathology especially in a highly prevalent and endemic region such as ours.

Sensory symptoms were seen in 16 patients. Clinical examination revealed paraspinal swelling in 4 cases, all of whom had paraspinal abscess on MRI. Spinal deformity in the form of kyphosis was seen in 3 patients. Bladder symtoms occured in 4 patients.

The MRI Spine findings were consistent with the clinical presentation and the classical picture of disc space involvement and vertebral body collapse along with tuberculous spondylitis associated with soft tissue changes and surrounding paravertebral collection causing cord compression. Several authors have concluded as MRI to be the ideal investigation of choice for diagnosis of Pott's spine and it has become the most important diagnostic tool for initiating treatment and follow up of patients with spinal TB (23) (28). In this study, 2 patients with lumbar

pott’s spine had psoas abscess. One patient with L5 S1 tuberculous spondylitis had psoas abscess and associated disc prolapse. Two patients had paraspinal abscess without any vertebral body collapse or cord compression in the dorsal and dorsolumbar region.

Out of the 28 cases with spinal tuberculosis, only one patient had pre existing pulmonary TB. Chest X-ray was normal in the remaining 27 patients and no new focus of tuberculosis was diagnosed. Two patients had diabetes, both of whom manifested with paraspinal abscess without vertebral body collapse. There were no HIV positive cases.

Conclusion

CONCLUSION

CNS TUBERCULOMA

- Majority of the patients with CNS tuberculoma presented with headache as the chief complaint without any systemic feature of active tuberculous infection.
- Majority of patients presented with a solitary lesion. CNS tuberculomas which were heterodense on CT were heterointense on MRI also. Most of the CNS tuberculomas which were hypodense on CT brain showed variabiltiy in MRI T1 and T2 according to the caseation.
- Majority of the caseating Tuberculomas were iso to hyperintense in MRI T1 and hypointense in MRI T2. Most of the Non caseating tuberculomas were hypointense in MRI T1 and hyperintense in T2. All the CNS tuberculomas were contrast enhancing in both CT and MRI.
- Majority of the patients present with CNS tuberculoma without any pulmonary or extra-pulmonary focus of tuberculosis. In this study 91% of the patients with CNS tuberculoma did not have pulmonary or extra-pulmonary tuberculosis. The patients with pulmonary or extra pulmonary tuberculosis developed CNS Tuberculomas inspite of ATT.

HYDROCEPHALUS

- Majority of the patients presented with communicating hydrocephalus. Obstructive type of hydrocephalus was commonly seen in patients with tuberculoma.
- CT brain revealed Basal exudates in majority of the cases which is almost diagnostic of TBM hydrocephalus when co-related with the clinical presentation and the CSF findings.
- Majority of the patients had lymphocytes in CSF cytology.
- High protein level and low sugar levels in the presence of lymphocyte in the CSF cytology is strongly suggestive of Tuberculous etiology.
- 20% of patients with hydrocephalus had pulmonary tuberculosis.
- Disseminated sytemic Tuberculosis and HIV positivity corelated with a poor clinical grade of presentation and had bad prognosis.

POTT'S SPINE

- Back pain was the commonest presenting symptom of Spinal tuberculosis. It occured early and lasted for a few months before the onset of sensory symptoms and weakness of limbs.
- Majority of the patients had Dorsal spine involvement.

- MRI spine findings are diagnostic of tuberculosis in majority of cases and is the most important tool for guiding in the diagnosis and management of spinal tuberculosis.
- 99% of the patients with spinal tuberculosis do not have any pulmonary or extra-pulmonary focus of tuberculosis.

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Appendices

APPENDIX I

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To
Dr. B.Sneha Chitra
Post Graduate in M.Ch. Neuro Surgery
Institute of Neuro Surgery
Madras Medical College
Chennai 600 003

Dear Dr. B.Sneha Chitra,

The Institutional Ethics Committee has considered your request and approved your study titled **"CLINICOPATHOLOGICAL AND RADIOLOGICAL PROFILE OF SURGICALLY TREATED NEUROTUBERCULOSIS IN A TERTIARY CARE TEACHING INSTITUTE IN SOUTH INDIA " NO. 23072016.**

The following members of Ethics Committee were present in the meeting hold on **05.07.2016** conducted at Madras Medical College, Chennai 3

1.Prof. C. Rajendran, MD.	Chairperson
2.Prof. Isaac Christian Moses,MD.,Dean(FAC)MMC ,Ch-3	Deputy Chairperson
3.Prof. Sudha Seshayyan, MD., Vice Principal, MMC.Ch- 3.	Member Secretary
4.Prof. B.Vasanthi,MD.,Prof of Pharmacology, MMC,	Member
5.Prof. P.Raghumani.MS., Professor of Surgery, Inst. of surgery	Member
6.Prof. Md Ali, MD.,DM., Prof & HOD of MGE, MMC,Ch-3.	Member
7.Prof. Baby Vasumathi.,MD, Director. Inst. of O&G,	Member
8.Prof. K.Ramadevi.,MD, Director, Inst of Bio-Chemistry, MMC,	Member
9.Prof. R.Padmavathy,MD., Professor, Inst.of Pathology, MMC,Ch	Member
10.Prof.S.Tito, MD, Director, Inst.of Inter Med, Ch-3.	Member
11.Tmt.J.Rajalakshmi, Junior Administrative Officer,MMC,Ch	Layperson
12.Thiru.S.Govindasamy., B.A.B.L., High Court, Chennai-1	Lawyer
13.Tmt.ArnoldSaulina, MA., MSW.,	Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

APPENDIX II

COPY OF PROFORMA USED

PROFORMA

Clinicopatholgical and radiological profile of surgically treated Neurotuberculosis in a Tertiary Care Teaching Institute in South India

1) Name
2) Age
3) Sex
4) IP no
5) Date of Admission
6) Date of Surgery
7) Diagnosis
    i) Post meningitic hydrocephalus
    ii) Tuberculoma
        Solitary/Multiple
        Location- supratentorial
                infratentorial-cerebellum/brainstem
    iii) Pott's spine
        Location- cervical/dorsal/lumbosacral

8) Surgery done:
    i) CSF diversion
        VP shunt /EVD / ETV
    ii) Excision of tuberculoma
        Biopsy / Partial excision / Total excision
    iii) Corpectomy & Spinal stabilisation
    iv) Drainage of paraspinal abscess

9) Clinical presentation:
    i) GCS
    ii) Fever
    iii) Loss of weight/loss of appetite
    iv) Headache
    v) Altered sensorium
    vi) Loss of consciousness
    vii) Seizures
    viii) Cranial nerve palsy
    ix) Motor weakness
    x) Sensory symptoms
    xi) Back pain/neck pain
    xii) Bowel/bladder symptoms
    xiii) Paraspinal swelling
    xiv) Spinal deformity

10) Radiological findings
    i) CT brain
        Plain
        Contrast
        Basal exudates
    ii) MRI brain
        T1
        T2
        Contrast
    iii) MRS finding
    iv) CT/Xray spine
    v) MRI spine
        T1
        T2
        Contrast

11) Histopathological finding:

Caseating/ non caseating granuloma

12) CSF analysis

i) Cytology

ii) Biochemistry

Protein

Lymphocytes

iii) AFB

iv) C/S

13) Risk factors:

i) DM

ii) HIV status

iii) Contact history with TB

14) Sputum AFB status

15) Chest X-ray / CT chest finding

16) Past history of pulmonary/extra pulmonary TB

17) Newly diagnosed TB focus- pulmonary/ extra pulmonary TB

18) Prior ATT therapy

19) Condition at discharge/surgical outcome

Master Chart

S. No	Name	Age	Sex	IP No	Date of Admission	Date of Surgery	Hydrocephalus	Tuberculoma	Supratentorial Tuberculoma	Infratentorial Tuberculoma	Pott's Spine	CSF Diversion	Excision of Tuberculoma	Corpectomy and Spinal Stabilisation	Drainage of Paraspinal Abscess	GCS on Admission	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
1	SUDHA	21	F	81536	8/12/2013	8/15/2013	No Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
2	GOWTHAMI	21	F	85664	8/16/2013	8/17/2013	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
3	SHEELA	24	F	99365	7/23/2013	7/26/2013	No Hydrocephalus	SINGLE	R TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
4	RAJESH	22	M	107486	9/18/2013	9/23/2013	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
5	GOPI	20	M	110475	10/25/2017	10/26/2017	No Hydrocephalus	SINGLE	L PARIETO OCCIPITAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
6	PALANI	28	M	110277	10/15/2017	10/16/2017	No Hydrocephalus	MULTIPLE	L SYLVIAN FISSURE	BRAIN STEM	No Spinal Involvement	No CSF Diversion	Biopsy	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
7	GURUSAMY	51	M	107925	1/8/2014	1/10/2014	No Hydrocephalus	SINGLE	L PARIETAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
8	VEERASAMY	53	M	124606	1/15/2014	1/17/2014	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
9	MANJULA	24	F	8190	1/16/2014	1/18/2014	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
10	SARVESH	8	M	18743	3/13/2014	3/14/2014	No Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
11	STELLA MARY	25	F	15760	3/20/2014	3/22/2014	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
12	RAJESHWARI	18	F	19444	4/26/2014	4/27/2014	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
13	SRINIVASAN	55	M	20828	5/3/2014	5/5/2014	No Hydrocephalus	SINGLE	L TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
14	MUTHULAKSHMI	44	F	21847	5/10/2014	5/12/2014	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	13	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
15	ANJALIDEVI	55	F	31165	6/12/2014	6/13/2014	No Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
16	PARTHIBAN	21	M	22452	7/13/2014	7/15/2014	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
17	RAJESH	10	M	102465	7/20/2014	7/21/2014	No Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	No Headache	Altered sensorium
18	VIJAY	32	M	131355	12/28/2014	12/30/2014	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
19	PARVATHI	40	F	131209	1/2/2015	1/3/2015	No Hydrocephalus	SINGLE	R TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
20	ARUMUGAM	35	M	4633	1/13/2005	1/29/2015	No Hydrocephalus	MULTIPLE	B/L CEREBRAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium

S. No	Name	Age	Sex	IP No	Date of Admission	Date of Surgery	Hydrocephalus	Tuberculoma	Supratentorial Tuberculoma	Infratentorial Tuberculoma	Pott's Spine	CSF Diversion	Excision of Tuberculoma	Corpectomy and Spinal Stabilisation	Drainage of Paraspinal Abscess	GCS on Admission	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
21	SANGALVARAYAN	68	M	6799	1/28/2015	1/29/2015	No Hydrocephalus	SINGLE	CORPUSCALLOSUM	-	No Spinal Involvement	No CSF Diversion	Biopsy	-	-	14	No Fever	No Loss of weight / No Loss of appetite	No Headache	Altered sensorium
22	KUPPU	45	F	9528	1/28/2015	1/30/2005	No Hydrocephalus	SINGLE	L FRONTO TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
23	KRISHNAN	45	M	99765	2/15/2015	2/17/2015	No Hydrocephalus	SINGLE	R TEMPORO PARIETAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	No Headache	Altered sensorium
24	ARUMUGAM	35	M	4633	2/20/2015	2/21/2015	No Hydrocephalus	MULTIPLE	B/L CEREBRAL	-	No Spinal Involvement	No CSF Diversion	Biopsy	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
25	POONGAVANAM	60	F	10225	3/26/2015	3/27/2015	No Hydrocephalus	SINGLE	L PARIETAL OCCIPITAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	13	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
26	VIJAYA	45	F	11716	4/10/2015	4/12/2015	No Hydrocephalus	SINGLE	L THALAMIC	-	No Spinal Involvement	No CSF Diversion	Biopsy	-	-	14	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
27	ARUMUGAM	55	M	15485	5/12/2015	5/13/2015	No Hydrocephalus	SINGLE	L TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
28	VIGNESH	19	M	15514	4/13/2015	4/14/2015	Obstructive Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
29	IYYASAMY	55	M	16930	3/20/2015	3/21/2015	No Hydrocephalus	SINGLE	R PARIETAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
30	BRINDAVATHY	26	F	26055	3/11/2015	3/19/2015	No Hydrocephalus	MULTIPLE	L FRONTOPARIETAL	RIGHT CEREBELLAR	No Spinal Involvement	VP SHUNT	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
31	KUMAR	47	M	26294	3/11/2015	3/20/2015	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
32	PADMAVATHY	35	F	29878	4/23/2015	4/24/2015	No Hydrocephalus	SINGLE	L PARIETAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
33	ANNAMALAI	55	M	44969	5/16/2015	5/17/2017	No Hydrocephalus	SINGLE	R PARIETO OCCIPITAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
34	VIJAYALAKSHMI	26	F	47365	5/6/2015	5/8/2015	No Hydrocephalus	MULTIPLE	B/L CEREBRAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
35	PORSELVI	24	F	68335	6/27/2015	6/30/2015	No Hydrocephalus	SINGLE	L TEMPERO PARIETAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	9	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
36	AYYASAMY	50	M	71169	6/28/2015	6/29/2015	No Hydrocephalus	SINGLE	R FTP RECURRENT	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	13	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
37	RAJAKUMAR	43	M	67134	6/2/2015	6/4/2015	TBM Communicating Hydrocephalus	SINGLE	L TEMPORAL	-	No Spinal Involvement	VP SHUNT	Partial Excision	-	-	9	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
38	CHANDRA	55	F	84783	4/3/2015	4/4/2015	No Hydrocephalus	SINGLE	R TEMPERO PARIETAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
39	ETHIRAJ	42	M	3741	5/5/2015	5/6/2015	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
40	MARAGATHAM	68	F	1105	6/10/2015	6/12/2015	No Hydrocephalus	MULTIPLE	LEPTOMENINGEAL DEPOSITS FM	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium

S. No	Name	Age	Sex	IP No	Date of Admission	Date of Surgery	Hydrocephalus	Tuberculoma	Supratentorial Tuberculoma	Infratentorial Tuberculoma	Pott's Spine	CSF Diversion	Excision of Tuberculoma	Corpectomy and Spinal Stabilisation	Drainage of Paraspinal Abscess	GCS on Admission	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
41	SAROJINI	24	F	4077	7/21/2015	7/23/2015	No Hydrocephalus	SINGLE	R FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
42	JANANI	22	F	9455	1/26/2006	1/28/2016	No Hydrocephalus	SINGLE	-	LEFT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
43	MANIKANDAN	20	M	29909	3/17/2016	3/19/2016	No Hydrocephalus	SINGLE	L FRONTAL	-	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
44	ALANGARAM	43	M	36921	4/4/2016	4/8/2016 & 4/12/2016	Obstructive Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	No CSF Diversion	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
45	BHUVANESWARI	58	F	48835	2/14/2016	2/15/2016	No Hydrocephalus	SINGLE	L PARIETAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
46	ESAKKIMUTHU	36	M	47434	5/2/2016	5/4/2016	No Hydrocephalus	MULTIPLE	L TEMPORAL	-	No Spinal Involvement	No CSF Diversion	Partial Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
47	KAVIRAJ	20	M	64078	6/13/2016	6/22/2016	Obstructive Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	ETV	Total Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	No Altered sensorium
48	TAMILARASAN	3.5	M	114023	10/22/2015	10/22/2015 & 10/29/2015	Obstructive Hydrocephalus	SINGLE	-	RIGHT CEREBELLAR	No Spinal Involvement	VP SHUNT	Total Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
49	MARI	62	M	67873	8/6/2013	8/10/2013	No Hydrocephalus	no tuberculoma	-	-	L4 COLLAPSE	No CSF Diversion	No Excision	L4 CORPECTOMY AND FUSION	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
50	JOSHUA	6	M	115821	12/12/2013	12/16/2013	No Hydrocephalus	no tuberculoma	-	-	D10 COLLAPSE	No CSF Diversion	No Excision	D10 CORPECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
51	PANDURANGAN	75	M	2344	1/3/2014	1/4/2014	No Hydrocephalus	no tuberculoma	-	-	C6-C7	No CSF Diversion	No Excision	C6 CORPECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
52	NARAYANAN	50	M	25440	2/14/2014	2/16/2014	No Hydrocephalus	no tuberculoma	-	-	D8-D10 EPIDURAL ABSCESS WITH PARASPINAL OLLECTION	No CSF Diversion	No Excision	-	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
53	AKASH	8	M	53761	4/15/2014	4/20/2014	No Hydrocephalus	no tuberculoma	-	-	D10 COLLAPSE	No CSF Diversion	No Excision	D10 CORPECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
54	PUYIAMMAL	37	F	62531	4/26/2014	4/29/2014	No Hydrocephalus	no tuberculoma	-	-	D10D11	No CSF Diversion	No Excision	D10 CORPECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
55	PRIYADARSHINI	14	F	75503	5/3/2014	5/7/2014	No Hydrocephalus	no tuberculoma	-	-	L1L2	No CSF Diversion	No Excision	L2 CORPECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
56	KANCHANA	36	F	49197	5/14/2014	5/20/2014	No Hydrocephalus	no tuberculoma	-	-	L2 SPINOUS PROCESS	No CSF Diversion	No Excision	L2 LAMINECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
57	PRASHANTH	18	M	105170	6/24/2014	6/27/2014	No Hydrocephalus	no tuberculoma	-	-	L2L3	No CSF Diversion	No Excision	L2 CORPECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium

S. No	Name	Age	Sex	IP No	Date of Admission	Date of Surgery	Hydrocephalus	Tuberculoma	Supratentorial Tuberculoma	Infratentorial Tuberculoma	Pott's Spine	CSF Diversion	Excision of Tuberculoma	Corpectomy and Spinal Stabilisation	Drainage of Paraspinal Abscess	GCS on Admission	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
58	MANIKANDAN	21	M	4805	7/14/2014	7/17/2014	No Hydrocephalus	no tuberculoma	-	-	C1C2	No CSF Diversion	No Excision	TRANSORAL ODONTOIDECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
59	RAJESH	30	M	601	12/20/2014	12/23/2014	No Hydrocephalus	no tuberculoma	-	-	C6 D8 INTRAMEDULLARY SOL	No CSF Diversion	No Excision	LAMINECTOMY AND BIOPSY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
60	MARIMUTHU	42	M	10937	1/31/2015	2/10/2015	No Hydrocephalus	no tuberculoma	-	-	D9 COLLAPSE	No CSF Diversion	No Excision	D9 CORPECTOMY-THORACOTOMY &FUSION	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
61	PREMKUMAR	11	M	14355	2/9/2015	2/11/2015	No Hydrocephalus	no tuberculoma	-	-	L2 SPINOUS PROCESS	No CSF Diversion	No Excision	L1L2L13 LAMINECTOMY	YES	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
62	NOORJAHAN	65	F	11630	2/2/2015	2/18/2015	No Hydrocephalus	no tuberculoma	-	-	D7 COLLAPSE	No CSF Diversion	No Excision	D7 CORPECTOMY-THORACOTOMY &FUSION	-	15	Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
63	MOHAN	49	M	21229	4/16/2015	4/19/2015	No Hydrocephalus	no tuberculoma	-	-	D8	No CSF Diversion	No Excision	D8 CORPECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
64	BALAMURUGAN	37	M	17156	4/24/2015	4/27/2015	No Hydrocephalus	no tuberculoma	-	-	L1L2	No CSF Diversion	No Excision	LAMINECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
65	LAKSHMIKANTH	38	M	41185	4/29/2014	5/5/2015	No Hydrocephalus	no tuberculoma	-	-	L5 S1 Pott's spine with paraspinal abscess	No CSF Diversion	No Excision	L5 LAMINECTOMY & DISCECTOMY	YES	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
66	CHANDRASEKAR	75	M	73335	7/10/2015	7/20/2015	No Hydrocephalus	no tuberculoma	-	-	L4L5 SPONDYLOSIS WITH PARAVERTEBRAL SOFT TISSUE & CANAL STENOSIS	No CSF Diversion	No Excision	LAMINECTOMY & BIOPSY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
67	KABULUR RAHMAN	33	M	74757	7/14/2015	7/24/2015	No Hydrocephalus	no tuberculoma	-	-	C1C2 LYTIC LESION	No CSF Diversion	No Excision	TRANSORAL ODONTOIDECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
68	VANITHA	32	F	86299	8/13/2015	8/14/2015	No Hydrocephalus	no tuberculoma	-	-	L1L2 COLLAPSE WITH EPIDURAL ABSCESS	No CSF Diversion	No Excision	L1L2 LAMINECTOMY	YES	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
69	SHANTHI	56	F	101301	9/21/2015	10/7/2015	No Hydrocephalus	no tuberculoma	-	-	D11-D12 INTRAMEDULLARY	No CSF Diversion	No Excision	LAMINECTOMY &EXCISION	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
70	NASREEN	18	F	103245	9/25/2015	10/16/2015	No Hydrocephalus	no tuberculoma	-	-	D4-D6	No CSF Diversion	No Excision	THORACOTOMY & POSTERIOR	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium

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71	KUMAR	57	M	5291	10/11/2015	10/13/2015	No Hydrocephalus	no tuberculoma	-	-	D11D12	No CSF Diversion	No Excision	THORACOTOMY & POSTERIOR	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
71	ANDREWS	22	M	16103	10/20/2015	10/24/2015	No Hydrocephalus	no tuberculoma	-	-	D10-L3	No CSF Diversion	No Excision	No Spine Surgery	YES	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
73	MATHUJANAKI	28	F	17922	11/15/2015	11/20/2015	No Hydrocephalus	no tuberculoma	-	-	D7D8	No CSF Diversion	No Excision	D8 CORPECTOMY	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
74	SHEELADEVI	52	F	25003	12/21/2015	12/24/2015	No Hydrocephalus	no tuberculoma	-	-	D10	No CSF Diversion	No Excision	THORACOTOMY & POSTERIOR	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
75	VADIVELAN	25	M	29143	4/3/2016	4/7/2016	No Hydrocephalus	no tuberculoma	-	-	C1C2	No CSF Diversion	No Excision	TRANSORAL ODONTOIDECTOMY	-	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
76	THENMOZHI	24	F	40898	4/20/2016	4/21/2016	No Hydrocephalus	no tuberculoma	-	-	D7	No CSF Diversion	No Excision	THORACOTOMY & POSTERIOR	-	15	No Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
77	TAMILSELVAN	20	M	43122	4/20/2016	4/23/2016	No Hydrocephalus	no tuberculoma	-	-	D8D9	No CSF Diversion	No Excision	-	YES	15	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
78	RAASHMI	13	F	22572	2/27/2016	3/16/2016	TBM obstructive hydrocephalus	MULTIPLE	OCCIPITAL	CERBELLAR AND BRAINSTEM	No Spinal Involvement	VP SHUNT	Biopsy	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
79	CHANDRAN	28	M	67696	6/22/2016	23-6-2016 & 8-7-2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
80	MOHAN	38	M	50150	5/9/2016	5/10/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	10	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
81	MOTHIKA	1	F	61918	6/7/2016	6/9/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	No Headache	Altered sensorium
82	VASUDEVAN	36	M	54180	5/19/2015	5/19/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	EVD & VP SHUNT	No Excision	-	-	8	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
83	CHAITANYA	4	M	58702	5/30/2016	31-5-2016 & 7-5-2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT REVISION	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
84	VIJAYAN	55	M	53299	5/17/2016	5/17/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	9	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
85	SANGEETHA	21	F	42873	4/20/2016	4/21/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	10	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
86	KAMALAMMAL	57	F	57579	5/17/2016	5/17/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	7	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium

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87	KALAIVANI	24	F	45826	4/19/2016	4/19/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	8	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
88	PRABHURAJ	65	M	43126	5/26/2016	5/26/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	6	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
89	PRABAKARAN	21	M	53524	5/21/2016	5/22/2016	TBM obstructive hydrocephalus	MULTIPLE	L GANGLIO CAPSULAR AND BASAL CISTERNS	-	No Spinal Involvement	VP SHUNT	Biopsy	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
90	VISHWANATHAN	45	M	56567	1/21/2016	1/22/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
91	BINDU	8	F	62341	4/3/2016	4/4/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	15	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
92	VINCHASRI	1 1/2	F	77456	6/12/2016	6/13/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	No Headache	No Altered sensorium
93	GOVINDHARAJ	52	M	65140	6/15/2016	6/16/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
94	BAVANI	24	F	67823	6/26/2016	6/26/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
95	JAYANTHI	42	F	37081	4/23/2013	4/23/2013	TBM obstructive hydrocephalus	MULTIPLE	-	BRAIN STEM	No Spinal Involvement	VP SHUNT	Biopsy	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
96	ARULMANI	1	F	49295	5/29/2013	5/29/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
97	JEGADEESH	20	M	2357	6/5/2013	6/5/2013	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	EVD	No Excision	-	-	10	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
98	ROJA	11	F	53398	6/10/2013	6/10/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT REVISION	No Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
99	AMUDHA	20	F	51565	6/4/2013	6/4/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT REVISION	No Excision	-	-	13	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	SIVASAKTHI	23	F	41132	5/6/2013	5/6/2013	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium

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##	BABU	40	M	81572	8/30/2015	8/30/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	RAJKUMAR	38	M	91131	9/9/2015	9/9/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	15	Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
##	ARUMUGAM	42	M	16049	12/9/2015	12/9/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	9	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	KALAVATHY	63	F	5457	1/16/2016	1/16/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	10	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	VISHWANATHAN	52	M	100758	1/21/2016	1/21/2006	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	8	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	SABARI	4	M	201	1/2/2016	1/2/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	No Headache	No Altered sensorium
##	KEERTHANA	25	F	79245	7/22/2015	7/23/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	ETV	No Excision	-	-	14	No Fever	Loss of weight / Loss of appetite	Headache	No Altered sensorium
##	SUDHAKAR	6	M	71129	7/5/2015	7/5/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	VIGNESH	19	M	16028	10/6/2015	10/6/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	SANGEETHA	27	F	144	6/25/2015	6/25/2015	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	ETV	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	KALAIARASAN	40	M	1247	3/21/2016	3/21/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	PRABAKARAN	25	M	4706	4/30/2016	4/30/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	VIJAYAN	55	M	23650	5/17/2016	5/17/2016	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	SUBRAMANI	10	M	76821	7/14/2016	7/14/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	CHANDRAN	28	M	2162	6/22/2016	6/22/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium

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##	PRIYAA	20	F	63102	6/10/2016	6/10/2016	TBM obstructive hydrocephalus	MULTIPLE	SUPRASELLAR	-	No Spinal Involvement	VP SHUNT	Biopsy	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	NOWSATH BANU	16	F	28412	6/6/2016	6/6/2016	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	NATHIYA	25	F	62816	7/6/2013	7/6/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	GUNASEKAR	54	M	60334	6/29/2013	6/29/2013	TBM obstructive hydrocephalus	MULTIPLE	B/L CEREBRAL AND CISTERNAL	-	No Spinal Involvement	VP SHUNT	Biopsy	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	BHARATH	21	M	34008	8/5/2013	8/5/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	12	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	NATARAJAN	52	M	32519	7/18/2013	7/18/2013	TBM obstructive hydrocephalus	MULTIPLE	SUPRASELLAR	-	No Spinal Involvement	VP SHUNT	Biopsy	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	PREETHI	7	F	69846	7/27/2013	7/27/2013	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT REVISION	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	THIRUMALAI	38	M	27599	3/15/2015	3/15/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	RAJAMMAL	56	F	278	4/16/2015	4/16/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	MANI	46	M	36961	4/6/2015	4/6/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	REVATHI	23	F	9106	3/5/2015	3/5/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	15	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	KURUNJI VALAVAN	42	M	7422	7/15/2015	7/15/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	SRIMATHY	8	F	9865	7/25/2015	7/25/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	No Headache	Altered sensorium
##	VIGNESH	19	M	16028	10/6/2015	10/6/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium

S. No	Name	Age	Sex	IP No	Date of Admission	Date of Surgery	Hydrocephalus	Tuberculoma	Supratentorial Tuberculoma	Infratentorial Tuberculoma	Pott's Spine	CSF Diversion	Excision of Tuberculoma	Corpectomy and Spinal Stabilisation	Drainage of Paraspinal Abscess	GCS on Admission	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	CHANDRASEKARAN	35	M	73345	7/10/2015	7/10/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	12	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	PERUMAL	55	M	28733	3/28/2013	3/28/2013	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	MAHESH	25	M	85569	8/11/2015	8/11/2015	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	CHINTAMANI	35	F	87654	4/26/2016	4/26/2016	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	No Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	RAJA	33	M	90932	6/16/2016	6/16/2016	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	GOVINDHAN	46	M	17092	7/8/2014	7/8/2014	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	SURESH	38	M	18088	9/19/2015	9/19/2015	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	RAJAMANICKAM	45	M	17688	11/4/2014	11/4/2014	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	No Loss of weight / No Loss of appetite	Headache	Altered sensorium
##	JAYARAJ	33	M	45413	7/7/2013	7/7/2013	TBM Communicating Hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	13	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	KATHALINGAM	46	M	66734	9/8/2014	9/8/2014	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	9	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	MANI	28	M	78132	10/9/2014	10/9/2014	TBM communicating hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium
##	KALAIVANAN	65	M	43213	2/1/2014	2/1/2014	TBM obstructive hydrocephalus	no tuberculoma	-	-	No Spinal Involvement	VP SHUNT	No Excision	-	-	14	Fever	Loss of weight / Loss of appetite	Headache	Altered sensorium

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
1	SUDHA	No Loss of consciousness	No Seizures	B / L Sixth Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
2	GOWTHAMI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	CONTRAST	ISO	HYPO	NOT RESTRICTED	ENHANCING
3	SHEELA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	ISO TO HYPODENSE	ENHANCING	HETERO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
4	RAJESH	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
5	GOPI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	ISO	HETERO	NOT RESTRICTED	ENHANCING
6	PALANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	MIXED DENSITY	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
7	GURUSAMY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANGING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
8	VEERASAMY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
9	MANJULA	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	MIXED DENSITY	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
10	SARVESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
11	STELLA MARY	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	NOT RESTRICTED	ENHANCING
12	RAJESHWARI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
13	SRINIVASAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
14	MUTHULAKSHMI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	MIXED DENSITY	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
15	ANJALIDEVI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	RESTRICTED	ENHANCING
16	PARTHIBAN	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	MIXED DENSITY	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
17	RAJESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
18	VIJAY	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
19	PARVATHI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	R HYPERDENSE	ENHANCING	HETERO	HETERO	NOT RESTRICTED	ENHANCING
20	ARUMUGAM	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	HETERO	HYPER	NOT RESTRICTED	ENHANCING

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
21	SANGALVARAYAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HETERODENSE	ENHANCING	HETERO	HETERO	RESTRICTED	ENHANCING
22	KUPPU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	ISO TO HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
23	KRISHNAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
24	ARUMUGAM	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
25	POONGAVANAM	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCIG	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
26	VIJAYA	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
27	ARUMUGAM	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HETERO	NOT RESTRICTED	ENHANCING
28	VIGNESH	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
29	IYYASAMY	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	NOT RESTRICTED	ENHANCING
30	BRINDAVATHY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	RING ENHANCING	HETERO	HETERO	NOT RESTRICTED	ENHANCING
31	KUMAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Left Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	RING ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
32	PADMAVATHY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	RING ENHANCING	ISO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
33	ANNAMALAI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Left Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
34	VIJAYALAKSHMI	No Loss of consciousness	Seizures	B / L Sixth Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	RING ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
35	PORSELVI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
36	AYYASAMY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Left Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
37	RAJAKUMAR	Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	RING ENHANCING	HYPER	HYPO	NOT RESTRICTED	ENHANCING
38	CHANDRA	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HETERO	HETERO	Diffusion Not Mentioned in Case Sheet	ENHANCING
39	ETHIRAJ	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPERDENSE	ENHANCING	HYPO	HYPER	Diffusion Not Mentioned in Case Sheet	ENHANCING
40	MARAGATHAM	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	Quadriparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
41	SAROJINI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HYPER	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
42	JANANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	RING ENHANCING	ISO	HYPO	NOT RESTRICTED	ENHANCING
43	MANIKANDAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	MIXED DENSITY	ENHANCEMENT	HETERO	HETERO	NOT RESTRICTED	YES ENHANCEMENET
44	ALANGARAM	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HETERO	HYPO	NOT RESTRICTED	ENHANCING
45	BHUVANESWARI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	NOT RESTRICTED	ENHANCING
46	ESAKKIMUTHU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	Right Hemiparesis	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
47	KAVIRAJ	No Loss of consciousness	No Seizures	B / L Sixth Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	ISO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
48	TAMILARASAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	HYPODENSE	ENHANCING	HETERO	HYPO	Diffusion Not Mentioned in Case Sheet	ENHANCING
49	MARI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	YES	YES 4 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
50	JOSHUA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 5 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
51	PANDURANGAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	QUADRIPARESIS	No Cerebellar Symptoms and Signs	YES	YES 6 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
52	NARAYANAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 1MONTH	No Bowel and Bladder Symptoms	YES	No Spinal Deformity	-	-	-	-	-	-
53	AKASH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 3 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	YES	-	-	-	-	-	-
54	PUYIAMMAL	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 7 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
55	PRIYADARSHINI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 4 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
56	KANCHANA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 7 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
57	PRASHANTH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 1 YEAR	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
58	MANIKANDAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	SPASTIC QUADRIPARESIS	No Cerebellar Symptoms and Signs	YES	YES 6 MONTHS	YES BLADDER INCONTINENCE	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
59	RAJESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 4 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
60	MARIMUTHU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPERESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 2 WEEKS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
61	PREMKUMAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 2 MONTHS	No Bowel and Bladder Symptoms	YES	No Spinal Deformity	-	-	-	-	-	-
62	NOORJAHAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 1YEAR	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
63	MOHAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 7 MONTHS	YES BLADDER INCONTINENCE	No Paraspinal Swelling	YES	-	-	-	-	-	-
64	BALAMURUGAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPERESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 15 DAYS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
65	LAKSHMIKANTH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES RADIATING PAIN 20 DAYS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
66	CHANDRASEKAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	paraplegia	No Cerebellar Symptoms and Signs	IMPAIRED	YES 2 MONTHS	YES BLADDER INCONTINENCE	No Paraspinal Swelling	YES	-	-	-	-	-	-
67	KABULUR RAHMAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	QUADRIPARESIS	No Cerebellar Symptoms and Signs	YES	YES 2 MONTHS	YES BLADDER INCONTINENCE	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
68	VANITHA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 1 YEAR	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
69	SHANTHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	DEC BELOW D10	YES 2 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
70	NASREEN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	DECREASED BELOW D4	YES 6 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
71	KUMAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	DECREASED BELOW D10	YES 7 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
71	ANDREWS	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 1 MONTH	No Bowel and Bladder Symptoms	YES	No Spinal Deformity	-	-	-	-	-	-
73	MATHUJANAKI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	YES	YES 8 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	YES	-	-	-	-	-	-
74	SHEELADEVI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	YES	YES 6 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
75	VADIVELAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	QUADRIPARESIS	No Cerebellar Symptoms and Signs	YES	YES FOR 1 MONTH	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
76	THENMOZHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	PARAPARESIS	No Cerebellar Symptoms and Signs	YES	YES 4 MONTHS	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	-	-	-	-	-	-
77	TAMILSELVAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	YES 3 MONTHS	No Bowel and Bladder Symptoms	YES	No Spinal Deformity	-	-	-	-	-	-
78	RAASHMI	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	RING LESIONS	ENHANCEMENT	ISO	HYPO	NOT RESTRICTED	ENHANCING
79	CHANDRAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
80	MOHAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	L HEMEPARESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	BASAL EXUDATES	not done	not done	L THALAMIC INFARCT	EXUDATES
81	MOTHIKA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
82	VASUDEVAN	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	LEPTOMENINGEAL AND BASAL ENHANCEMENT
83	CHAITANYA	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
84	VIJAYAN	Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
85	SANGEETHA	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
86	KAMALAMMAL	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
87	KALAIVANI	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
88	PRABHURAJ	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
89	PRABAKARAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	RIGHT HEMIPARESIS	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	MUTIPLE CONTRAST ENHANCING RACEMOSE LESIONS	ISO	HYPO	not done	ENHANCING
90	VISHWANATHAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
91	BINDU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	basal exudates	not done	not done	not done	not done
92	VINCHASRI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
93	GOVINDHARAJ	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
94	BAVANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
95	JAYANTHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	MUTIPLE CONTRAST ENHANCING RACEMOSE LESIONS	ISO	HYPO	not done	RING ENHANCING CONGLOMERATE LESIONS
96	ARULMANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
97	JEGADEESH	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	not done	not done	not done	not done	not done
98	ROJA	Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
99	AMUDHA	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	SIVASAKTHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	not done	not done	not done	not done	not done

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
##	BABU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	RAJKUMAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	No Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	ARUMUGAM	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KALAVATHY	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	VISHWANATHAN	Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	SABARI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KEERTHANA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	SUDHAKAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	VIGNESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	SANGEETHA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KALAIARASAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	PRABAKARAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	VIJAYAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE	BASAL EXUDATES	not done	not done	not done	not done
##	SUBRAMANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	CHANDRAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
##	PRIYAA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE	BASAL EXUDATES AND SUPRASELLAR RING ENHANCING LESIONS	ISO	HYPO	not done	RING ENHANCING CONGLOMERATE LESIONS
##	NOWSATH BANU	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	NATHIYA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	GUNASEKAR	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	BHARATH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	NATARAJAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE	BASAL EXUDATES AND RING LESIONS	not done	not done	not done	not done
##	PREETHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	THIRUMALAI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	RAJAMMAL	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	MANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	REVATHI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KURUNJI VALAVAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	SRIMATHY	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	VIGNESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done

S. No	Name	Loss of consciousness	Seizures	Cranial nerve palsy	Papilledema	Motor weakness	Cerebellar Signs and Symptoms	Sensory symptoms	back pain/neck pain	Bowel/bladder symptoms	Paraspinal swelling	Spinal deformity	CT Brain Plain	CT Brain Contrast	MRI T1	MRI T2	MRI DWI	MRI Contrast
##	CHANDRASEKARAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	PERUMAL	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	MAHESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	CHINTAMANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	RAJA	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	GOVINDHAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	SURESH	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	not done	not done	not done	not done	not done
##	RAJAMANICKAM	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	JAYARAJ	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KATHALINGAM	No Loss of consciousness	Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	MANI	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	COMMUNICATING HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done
##	KALAIVANAN	No Loss of consciousness	No Seizures	No Cranial Nerve Palsy	Papilledema	No Focal Neurological Deficit	No Cerebellar Symptoms and Signs	No Sensory Symptoms	No Back Pain, Neck Pain	No Bowel and Bladder Symptoms	No Paraspinal Swelling	No Spinal Deformity	OBSTRUCTIVE HYDROCEPHALUS	BASAL EXUDATES	not done	not done	not done	not done

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
1	SUDHA	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
2	GOWTHAMI	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	6 MONTHS	IMPROVED
3	SHEELA	MRS Non Specific	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
4	RAJESH	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TUBERCULOMA	NO newly diagnosed TB	6 MONTHS	IMPROVED
5	GOPI	CHOLINE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
6	PALANI	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	4 MONTHS	IMPROVED
7	GURUSAMY	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
8	VEERASAMY	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
9	MANJULA	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
10	SARVESH	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
11	STELLA MARY	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
12	RAJESHWARI	MRS Non Specific	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
13	SRINIVASAN	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	6 MONTHS	IMPROVED
14	MUTHULAKSHMI	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
15	ANJALIDEVI	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
16	PARTHIBAN	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
17	RAJESH	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
18	VIJAY	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
19	PARVATHI	CHOLINE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
20	ARUMUGAM	CHOLINE PEAK & LIPID LACTATE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	POSITIVE	TB LYMPH NODE CONSOLIDATION	no preexisting TB	PULMONARY TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
21	SANGALVARAYAN	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
22	KUPPU	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
23	KRISHNAN	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
24	ARUMUGAM	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	POSITIVE	PTB	PULMONARY TB	NO newly diagnosed TB	4 MONTHS	IMPROVED
25	POONGAVANAM	NOT AVAILABLE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
26	VIJAYA	NOT AVAILABLE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
27	ARUMUGAM	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
28	VIGNESH	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
29	IYYASAMY	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
30	BRINDAVATHY	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TUBERCULOMA	NO newly diagnosed TB	6 MONTHS	IMPROVED
31	KUMAR	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
32	PADMAVATHY	NOT AVAILABLE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
33	ANNAMALAI	LIPID LACTATE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
34	VIJAYALAKSHMI	LIPID LACTATE	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
35	PORSELVI	NOT AVAILABLE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
36	AYYASAMY	LIPID LACTATE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	PULMONARY TB	NO newly diagnosed TB	4 MONTHS	IMPROVED
37	RAJAKUMAR	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	9 MONTHS	IMPROVED
38	CHANDRA	MRS Non Specific	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
39	ETHIRAJ	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
40	MARAGATHAM	NOT AVAILABLE	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	STATIC

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
41	SAROJINI	LIPID LACTATE	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
42	JANANI	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
43	MANIKANDAN	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
44	ALANGARAM	CHOLINE PEAK NAA REDUCED	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
45	BHUVANESWARI	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
46	ESAKKIMUTHU	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	B/L MILIARY MOTTLING	PULMONARY TB	NO newly diagnosed TB	8 MONTHS	IMPROVED
47	KAVIRAJ	CHOLINE PEAK	-	No Paraspinal Abscess	Non Caseating Granuloma	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
48	TAMILARASAN	LIPID LACTATE PEAK	-	No Paraspinal Abscess	Caseating Granuloma	ACELLULAR	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
49	MARI	-	L4 Collapse with PSE with Paravertebral Abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
50	JOSHUA	-	D10 collapse with paravertebral abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
51	PANDURANGAN	-	C5C6 potts spine with paravetebral abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
52	NARAYANAN	-	D8-D10 Abscess	YES	-	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
53	AKASH	-	D8 COLLAPSE WITH	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
54	PUYIAMMAL	-	D10 D11 Potts' Spine, D10 collapse with paravertebral abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
55	PRIYADARSHINI	-	L2 Potts spine with paraspinal abscess with cord compression	No Paraspinal Abscess	-	-	-	-	-	-	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
56	KANCHANA	-	L2 Potts spine with paraspinal abscess with cord compression	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
57	PRASHANTH	-	L2 collapse with paravertebral collection	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
58	MANIKANDAN	-	Transoral Odontoidectomy	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	PTB	PULMONARY TB	NO newly diagnosed TB	6 MONTHS	IMPROVED
59	RAJESH	-	C6-C8 heterointense enhancing lesion	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
60	MARIMUTHU	-	D9 Collapse no cord changes	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
61	PREMKUMAR	-	L2 Potts spine with paraspinal abscess with cord compression	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
62	NOORJAHAN	-	D7 Collapse with paraspinal abscess	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
63	MOHAN	-	D8 Collapse with paravertebral abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
64	BALAMURUGAN	-	L1L2 Spondylolisthesis,B/L Psoas abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	3 MONTHS	IMPROVED
65	LAKSHMIKANTH	-	L5-S1 Potts spine, IVDP with R psoas abscess	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
66	CHANDRASEKAR	-	L4L5 Spondylodiscitis? Chronic inflammation	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
67	KABULUR RAHMAN	-	C1C2 LYTIC LESION IN LATERAL MASS WITH PREVERTEBRAL SOFT TISSUE, D2,D5 SPONDYLITIS	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	6 MONTHS	IMPROVED
68	VANITHA	-	L1L2 HETEROGENOUS LESION INVOLVING BODY AND SPINE WITH EPIDURAL ABSCESS	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	improved
69	SHANTHI	-	HYPOINTENSE CONTRAST ENHANCING INTRAMEDULLARY LESION	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
70	NASREEN	-	D4 COLLAPSE WITH PRE AND PARA VERTEBRAL ABSCESS D4 TO D6	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
71	KUMAR	-	D11 COLLAPSE WITH PARAVERTEBRAL ABSCESS	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
71	ANDREWS	-	D10 TO L3 PARASPINAL ABSCESS	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	3 months	IMPROVED
73	MATHUJANAKI	-	D7 COLLAPSE WITH PARASPINAL ABSCESS	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
74	SHEELADEVI	-	D10 COLLAPSE WITH PARAVERTEBRAL ABSCESS	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
75	VADIVELAN	-	C1C2 Pott's spine with prevertebral abscess	No Paraspinal Abscess	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
76	THENMOZHI	-	D7 Collapse with paraspinal abscess	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
77	TAMILSELVAN	-	D8D9 Potts spine with D3-L1 paravertebral abscess	YES	-	-	-	-	-	-	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
78	RAASHMI	-	-	No Paraspinal Abscess	Caseating Granuloma	LYMPHOCYTES	242	42	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	YES	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	DISCHARGED
79	CHANDRAN	-	-	No Paraspinal Abscess	-	NORMAL	N	N	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	PULMONARY TB	NO newly diagnosed TB	6 MONTHS	IMPROVED
80	MOHAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	65	54	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	MILIARY TB	PULMONARY TB	NO newly diagnosed TB	9 months	IMPROVED
81	MOTHIKA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	217	16	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
82	VASUDEVAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	78	65	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
83	CHAITANYA	-	-	No Paraspinal Abscess	-	LYMPHOCTES	80	40	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
84	VIJAYAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	150	72	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	PULMONARY TB	PULMONARY TB	NO newly diagnosed TB	YES 6 MONTHS	EXPIRED
85	SANGEETHA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	86	30	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
86	KAMALAMMAL	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	180	60	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
87	KALAIVANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	76	24	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
88	PRABHURAJ	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	176	43	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	PULMONARY TB	PULMONARY TB	NO newly diagnosed TB	6 MONTHS	EXPIRED
89	PRABAKARAN	-	-	No Paraspinal Abscess	Caseating Granuloma	LYMPOCYTE	83	45	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	PTB	PULMONARY TB	NO newly diagnosed TB	4 MONTHS	IMPROVED
90	VISHWANATHAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	66	23	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
91	BINDU	-	-	No Paraspinal Abscess	-	LYMPHOCYE	76	24	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
92	VINCHASRI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	98	45	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
93	GOVINDHARAJ	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	66	24	NEGATIVE	NEGATIVE	Diabetic	NEGATIVE	Negative	POSITIVE	PULMONARY TB	PULMONARY TB	NO newly diagnosed TB	6 MONTHS	IMPROVED
94	BAVANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	86	35	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	YES	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
95	JAYANTHI	-		No Paraspinal Abscess	Caseating Granuloma	LYPHOCYTES	96	45	NEGATIVE	NEGATIVE	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
96	ARULMANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	125	33	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	YES	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
97	JEGADEESH	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	65	36	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
98	ROJA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	130	45	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	3 MONTHS	IMPROVED
99	AMUDHA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	78	34	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	TB MENINGITIS	NO newly diagnosed TB	2 MONTHS	IMPROVED
##	SIVASAKTHI	-	-	No Paraspinal Abscess	-	ACELLULAR	50	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
##	BABU	-	-	No Paraspinal Abscess	-	LYPHOCYTES	60	25	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	RAJKUMAR	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	66	33	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	ARUMUGAM	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	32	NEGATIVE	NEGATIVE	Diabetic	POSITIVE	Negative	POSITIVE	PTB	PULMONARY TB	NO newly diagnosed TB	5 MONTHS	EXPIRED
##	KALAVATHY	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	98	35	NEGATIVE	NEGATIVE	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	VISHWANATHAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	76	34	POSITIVE	NEGATIVE	Diabetic	POSITIVE	Negative	POSITIVE	MILIARY TB	DISSEMINATED PULMONARY TB	NO newly diagnosed TB	9 MONTHS	EXPIRED
##	SABARI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	96	23	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	KEERTHANA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	45	20	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	PTB	PULMONARY TB	NO newly diagnosed TB	3 MONTHS	IMPROVED
##	SUDHAKAR	-	-	No Paraspinal Abscess	-	LYMPHOCYES	66	22	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	VIGNESH	-	-	No Paraspinal Abscess	-	ACELLULAR	86	30	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	SANGEETHA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	96	24	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	KALAIARASAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	24	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	PRABAKARAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	60	23	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	VIJAYAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	86	34	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	SUBRAMANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	90	26	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	CHANDRAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	36	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
##	PRIYAA	-	-	No Paraspinal Abscess	Caseating Granuloma	LYMPHOCYTES	94	46	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	NOWSATH BANU	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	76	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	MILIARY TB	PULMONARY TB	NO newly diagnosed TB	4 MONTHS	EXPIRED
##	NATHIYA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	84	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	GUNASEKAR	-	-	No Paraspinal Abscess	Caseating Granuloma	LYMPHOCYTES	96	20	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	PTB	PULMONARY TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	BHARATH	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	24	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	NATARAJAN	-	-	No Paraspinal Abscess	Caseating Granuloma	LYMPHOCYTES	74	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	PREETHI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	66	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	THIRUMALAI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	86	22	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	RAJAMMAL	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	14	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	MANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	96	22	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	EXPIRED
##	REVATHI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	84	32	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	KURUNJI VALAVAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	30	20	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	SRIMATHY	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	40	43	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	VIGNESH	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	38	21	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED

S. No	Name	MRS	MRI Spine	Para Spinal Abscess	Caseating/ non caseating Granuloma	CSF Cytology	CSF Protein	CSF Sugar	CSF AFB	CSF Culture	DM	HIV	Contact history with TB	Sputum AFB	Chest X-ray/CT Chest	Pre-existing TB	Newly diagnosed TB FOCUS	Prior ATT Therapy	Outcome
##	CHANDRASEKARAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	97	16	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	PERUMAL	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	65	20	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	MAHESH	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	77	23	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	CHINTAMANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	60	22	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	RAJA	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	30	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	PTB	PULMONARY TB	NO newly diagnosed TB	5 MONTHS	IMPROVED
##	GOVINDHAN	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	90	23	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	SURESH	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	110	34	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	RAJAMANICKAM	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	76	20	NEGATIVE	NEGATIVE	Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	JAYARAJ	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	88	21	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	KATHALINGAM	-	-	No Paraspinal Abscess	-	LYMPHOCTES	120	33	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	POSITIVE	PTB	PULMONARY TB	NO newly diagnosed TB	6 MONTHS	EXPIRED
##	MANI	-	-	No Paraspinal Abscess	-	LYMPHOCYTES	98	30	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED
##	KALAIVANAN	-	-	No Paraspinal Abscess	-	LYMPHOCTES	66	21	NEGATIVE	NEGATIVE	Non Diabetic	NEGATIVE	Negative	Negative	NORMAL	no preexisting TB	NO newly diagnosed TB	no prior ATT	IMPROVED